ORAM'S
EXAMPLES IN ARITHMETIC.

PART II.

Crown 8vo, cloth lettered, price 1s. 6d.,

Questions in Book-keeping;

INTENDED AS

A GUIDE FOR THE CIVIL SERVICE EXAMINATIONS.

By J. BELL, B.A., LL.B.

W. & R. CHAMBERS, LONDON AND EDINBURGH.

ORAM'S EXAMPLES

IN

ARITHMETIC.

WITH

AN APPENDIX CONTAINING THE EXAMINATION PAPERS SET FOR THE CIVIL SERVICE, THE OXFORD LOCAL, AND THE COLLEGE OF PRECEPTORS PUPILS' EXAMINATIONS.

REVISED AND ENLARGED,

BY

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PART II.

LONDON:
HAMILTON, ADAMS, & CO., PATERNOSTER ROW.

1869.

LONDON:
PRINTED BY C F. HODGSON & SON,
GOUGH SQUARE, FLEET STREET.

PREFACE.

NUMEROUS demands having been made to the Editor for the publication of the more advanced portion of this Arithmetic, in continuation of Part I. for Junior Classes, he has taken the opportunity to increase the utility of the work by adding an Appendix containing the Papers as set at the Oxford Local Examinations, those set at the Examinations for the Civil Service, and those of the College of Preceptors. This Appendix will also be added to the Twelfth Edition of the entire Work.

J. BELL.

27, CAVERSHAM ROAD,
KENTISH TOWN, N.

TABLE OF CONTENTS.

SIMPLE PROPORTION;

OR,

SINGLE RULE OF THREE.

1. If 11 yards cost £4. 5*s*. 0½*d*., what will 4 yards cost?
2. If 7 yards cost £1. 19*s*. 11½*d*., what will 59 yards cost?
3. If 10 lbs. cost £2. 17*s*. 1*d*., what will 23 lbs. cost?
4. If 17 cwt. cost £15. 12*s*. 0½*d*., what will 15 cwt. cost?
5. If 60 yards cost £17. 2*s*. 6*d*., what will 7 yards cost?
6. If 30 yards of cloth cost 11*s*. 3*d*., what will 181 yards cost?
7. If 15 yards cost £1. 2*s*. 2½*d*., what will 18 yards cost?
8. If 22 yards of cloth cost £2. 18*s*. 4*d*., what will 3 yards cost?
9. If 17 cwt. cost £11. 1*s*. 8½*d*., what will 4 cwt. cost?
10. If 21 yards cost 9*s*. 7½*d*., what will 24 yards cost?
11. If 14 yards cost 5*s*. 6½*d*., what will 23 yards cost?
12. If 400 yards cost £95, what will 11 yards cost?
13. If 22 yards cost £19. 9*s*. 7*d*., what will 7 yards cost?
14. If 450 lbs. cost £105. 18*s*. 9*d*., what will 5 lbs. cost?
15. If 279 cwt. cost £946. 17*s*. 1⅓*d*., what will 2 cwt. cost?
16. If 20 yards cost £17. 0*s*. 2*d*., how many yards may be bought for £6. 3*s*. 11⅓*d*.?
17. If 21 yards cost £18. 11*s*. 10½*d*., how many yards may be bought for £107. 2*s*. 8½*d*.?
18. If 301 yards cost £79. 19*s*. 0¾*d*., how many yards may be bought for 15*s*. 11¼*d*.?
19. If 13 cwt. cost £10. 16*s*. 1⅓*d*., how many cwts. may be bought for £140. 9*s*. 7½*d*.?

20. If 130 cwt. cost £108. 1*s.* 3*d.*, how many cwts. may be bought for £421. 8*s.* 10½*d.*?
21. If 507 tons cost £701. 7*s.*, how many tons may be bought for £179. 16*s.* 8*d.*?
22. If 10 lbs. cost £7. 15*s.*, how much may be bought for £110. 16*s.* 6*d.*?
23. If 12 lbs. cost £9. 6*s.*, how much may be bought for £96. 17*s.* 6*d.*?
24. If 57 yards cost £2. 17*s.*, how many yards may be bought for a guinea?
25. If 143 lbs. cost £55. 8*s.* 3*d.*, how many pounds may be bought for £119. 7*s.*?
26. If 1 cwt. 31 lbs. cost £36. 18*s.* 10*d.*, how may cwts. may be bought for £79. 11*s.* 4*d.*?
27. If 2 cwt. 46 lbs. cost £13. 10*s.*, how many cwts. may be bought for £5. 12*s.*?
28. If four English ells cost £1. 13*s.* 4*d.*, how many yards may be bought for £12.?
29. If 20 English ells 4 qrs. cost £2. 12*s.*, how many yards may be bought for £12.?
30. If 105 yds. 3 qrs. cost £5. 5*s.* 9*d.*, how many English ells may be bought for £6. 12*s.*?
31. If 105 yds. 3 qrs. cost £21. 3*s.*, how many English ells may be bought for 5*s.*?
32. If 39 cwt. 3 qrs. 26 lbs. cost £195. 11*s.* 7*d.*, how many cwt. may be bought for £4. 17*s.* 10*d.*?
33. If 684 yards cost £11. 8*s.*, how many English ells may be bought for £2. 17*s.*?
34. If 28 galls. 1 pint cost 18*s.* 9*d.*, how many gallons may be bought for £25.?
35. If 1 cwt. 29 lbs. cost £7. 1*s.*, how many tons may be bought for £112.?
36. If 26 yds. 1 qr. cost £1. 15*s.*, how many yards may be bought for £11. 8*s.*?

37. If 45 English ells 3 qrs. cost £5. 14*s*., how many yards may be bought for £22. 16*s*.?
38. If 2 cwt. 46 lbs. cost £27., how many ounces may be bought for 1½*d*.?
39. If 13 yds. 3 qrs. cost £7. 6*s*. 8*d*., what will 3 qrs. cost?
40. If 4 yds. 1 qr. cost £1. 5*s*. 1¾*d*., what will 4 yds. 2 qrs. cost?
41. If 7 yds. 1 qr. cost £18. 18*s*. 2¼*d*., what will a yard cost?
42. If 800 English ells cost £950., what will 2 yds. 3 qrs. cost?
43. If 14 English ells cost £4. 3*s*. 4d., what cost 36 yards?
44. If a yard cost 7*s*. 6*d*., what cost 42 yds. 2 qrs.?
45. If 20 English ells 4 qrs. cost £2. 12*s*., what will 120 yards cost?
46. If 105 English ells 3 qrs. cost £6. 12*s*., what will 105 yds. 3 qrs. cost?
47. If 21 lbs. cost £18. 11*s*. 10½*d*., what cost 1 cwt. 9 lbs.?
48. If 1 cwt. 18 lbs. cost £108. 1*s*. 3*d*., what cost 4 cwt. 59 lbs.?
49. If 1 cwt. 29 lbs. cost £7. 1*s*., what will a ton cost?
50. If a cwt. cost £4. 17*s*. 10*d*., what cost 39 cwt. 3 qrs. 26 lbs.?
51. If 2 cwt. 46 lbs. cost £13. 10*s*., what will a cwt. cost?
52. If a lb. cost 2*s*. 8*d*., what cost 3 cwt. 1 qr. 14 oz.?
53. If 3 oz. 10 dwts. of silver cost £1. 1*s*. 10½*d*., what will 54 lbs. 7 oz. 4 dwts. 16 grs. cost?
54. How many yards of cloth, at £1. 4*s*. 6*d*. per yard, are worth 7 cwt. of sugar at £1. 15*s*. per cwt.?
55. How many yards of cloth, at 12*s*. 9*d*. a yard, are worth 17 casks of sugar, each worth £5. 17*s*.?
56. How many yards of cloth, at 10*s*. a yard, are worth 189 yards at 6*s*. 8*d*. a yard?
57. If 33 lbs. cost 8*s*. 11¼*d*., what will 20 casks cost each weighing 5 cwt. 2 qrs. 18 lbs.?

58. If 1 cwt. 3 qrs. 13 lbs. 4 oz. of coffee cost £15. 10*s.*, what will nine hogsheads cost, each weighing 8 cwt. 1 qr. 12 lbs. ?
59. If a cwt costs £5. 1*s.* 6*d.*, how many casks, each weighing 1 cwt. 2 qrs. 17 lbs., may be bought for £201. 3*s.* 9*d.* ?
60. If four casks of raisins, at £3. 10*s.* per cwt., cost £21., what is the weight of a cask ?
61. What is the weight of a bushel of wheat which costs 10*s.* when 5 ounces cost a penny ?
62. How many metres are there in 7 miles; 32 metres being equal to 35 yards ?
63. If a man earn 2*s.* per day when wheat is 8*s.* per bushel, how much ought he to earn when wheat is at 6*s.* ?
64. If 12 acres maintain 16 horses, how many horses will 27 acres keep ?
65. If 5 men mow 12 acres in a week, how many acres can 16 men mow in the same time ?
66. A carriage-wheel revolves 4 times in 13 yards, how often will it revolve in $2\frac{1}{2}$ miles ?
67. How often will a pendulum vibrate in a week, which vibrates 4 times in 5 seconds ?
68. If a cwt. of butter cost £5. 2*s.* 8*d.*, what cost $75\frac{1}{2}$ lbs. ?
69. If 1 cwt. 2 qrs. 15 lbs. cost £6. 17*s.* 3*d.*, what cost 3 tons 14 cwt. 1 qr. 9 lbs. ?
70. If a man walk 18 miles in 4 hrs. 20 min., what is his rate per hour ?
71. A wheel 9 ft. 6 in. in circumference makes 14 revolutions in 15 seconds, at what rate per hour does it move ?
72. If $6\frac{1}{2}$ yds. cost £1. 6*s.* $6\frac{1}{2}$*d.*, what cost 3 pieces each $22\frac{1}{2}$ yards ?
73. What cost 6 cheeses, each $14\frac{3}{4}$ lbs., at 3*s.* $4\frac{1}{2}$*d.* for 7 lbs. ?

74. What will 12 pieces of cloth cost, each $25\frac{1}{2}$ yds., at £20. 4*s*. 8*d*. for 47 Flemish ells?
75. What cost 3 pieces of cloth, each 25 yards, at £4. 19*s*. $11\frac{1}{2}d$. for 17 Flemish ells?
76. A bankrupt's liabilities are £3840, and his assets £828.; what will his creditors receive in the pound?
77. A bankrupt owes £4678, and his property is worth £2689. 17*s*.; what will a creditor for £800. receive?
78. A bankrupt owes £735, and his assets reach only £490; what does he pay in the pound?
79. A bankrupt owes £1250, and his effects are £144. 10*s*. $7\frac{1}{2}d$.; what does he pay in the pound?
80. If a person's estate be worth £1384. 16*s*. per annum, and the land tax is assessed at 2*s*. $9\frac{1}{2}d$.; what is his net annual income?
81. At 4*s*. 3*d*. in the pound, what will a creditor receive on a debt of £1256. 13*s*. 4*d*.?
82. What is the carriage of 5 hhds. of sugar, each 4 cwt. 3 qrs. 21 lbs., at 12*s*. 6*d*. per ton?
83. If 5 men do a piece of work in 18 days, how many can do it in 9 days?
84. If 10 men do a piece of work in 27 days, how many can do it in 54 days?
85. If 8 men can do a piece of work in 15 days, how many can do it in 12 days?
86. If I lend my friend £51. for 5 months, for how long should he lend me £34.?
87. If 10 men do a piece of work in $5\frac{1}{4}$ days of 13 hours each, in how many days of 9 hours each will they do the same?
88. If 3 men do a piece of work in $4\frac{1}{2}$ hours, in what time will 10 men do it?
89. If a man, walking 10 hours a day, finish a journey in 7 days; in how many days, of 12 hours, will he finish it?

90. If a coach go from London to Liverpool in 24 hours, at the rate of 9 miles an hour; in what time could the distance be performed by a train going 32 miles per hour?
91. How long will provisions last 270 persons, which 1250 persons consume in 18 days?
92. If 2 cwt. 19 lbs. be carried 36 miles for 7*s.* 6*d.*, how far can 1 cwt. 1 qr. 22 lbs. be carried for the same?
93. If 17 men do a piece of work in 19 hours, in how many hours will 11 men do it?
94. If 56 tenpenny loaves can be obtained from a quarter of wheat, how many eightpenny ones can be obtained?
95. At 11*s.* 11*d.* for 13 lbs., what is the price of 2 stones?
96. A farmer borrowed 192 qrs. of wheat, at £4. 11*s.*; how many quarters, at 4 guineas, must he give in exchange?
97. At 15 oz. per day, a garrison's provisions will last 8 months; how long will they last at 12½ oz. per day?
98. A garrison of 1000 men has provisions for 9 months; how many men must depart to enable it to hold out for 15 months?
99. How many shilling loaves can be made out of a quarter of wheat, from which 70 eightpenny loaves can be made?
100. If 24 horses can be kept for £20, when hay is 10*d.* a stone; how many horses can be kept for £20, when hay is 1*s.* a stone?
101. A garrison of 1000 men has provisions for 6 months, at the rate of 12½ oz. a day per man; what must each receive so that the provisions last 10 months?
102. If the ninepenny loaf weighs 4 lbs. 6 oz., when wheat is at 32*s.* per load; what should it weigh when wheat is 30*s.* per load?

103. If the sixpenny loaf weigh 3 lbs. when wheat is 63*s.* per quarter, what is wheat per quarter when it weighs 2 lbs. 8 oz. 8 dwt. ?

104. If a person can perform a journey in 26 days of $10\frac{1}{2}$ hours each, in how many days of $12\frac{3}{4}$ hours will he perform the same journey ?

105. If 3 pipes fill a cistern in 15 hours, in what time will 10 pipes fill it ?

106. If 9 pipes fill a cistern in $2\frac{1}{2}$ hours, in what time will 5 pipes fill it ?

107. If 3 pipes fill a cistern in $4\frac{1}{2}$ hours, how many will fill it in 3 hours ?

108. If 210 men build a house in 24 days, in how many days will 80 build it ?

109. If 2 pipes fill a cistern in 6 days $18\frac{1}{2}$ hours, how many pipes will fill it in 13 hours ?

110. If 20 men earn £400 in 87 weeks 3 days, in what time will 12 men earn it ?

111. If £20 gain £3 in 10 months, in what time will £7 gain it ?

112. If 42 men build a house in 108 days, how many men will build it in 63 days ?

113. If 7 cwt. be carried 56 miles for 3*s.* 6*d.*, how far should 3 cwt. 2 qrs. be carried for the same money ?

114. If 20 cwt. 3 qrs. $1\frac{1}{8}$ lbs. be carried 60 miles for 40*s.*, how far should 15 cwt. 2 qrs. 8 lbs. be carried for the same money ?

115. If 2 tons be carried 12 miles 5 furlongs for 18*s.* 6*d.*, what weight should be carried 47 miles ?

116. If the nett income of an estate be £267. 7*s.* 6*d.*, and the gross income be £285. 4*s.*, how much in the pound are the taxes ?

117. What is the income of a person who loses £84. 7*s.* 6*d.* on a rise of the income tax from 7*d.* to 9*d.* ?

118. If 9 men build a wall 48 ft. long and 24 ft. high in 5 days, what will be the length of a wall built by them in the same time 8 ft. in height?
119. How much land, at £2. 13*s*. 4*d*., must be given in exchange for 188 acres, at £2. 10*s*.?
120. A ton of potatoes cost £7., what cost 24 lbs.?
121. A man walks 17 miles 1650 yards in 3 hrs. 45 min.; find his rate per hour.
122. A bankrupt pays a dividend of 6*s*. 8*d*., what is the loss of a creditor to whom he owes £750?
123. If $4\frac{1}{8}$ cwt. of sugar cost 21 guineas, what cost $195\frac{1}{4}$ lbs.?
124. If a train going 25 miles an hour perform a journey in $4\frac{1}{2}$ hours, how long would it take a train going 30 miles to do the same?
125. If 5 gallons of oil cost 18*s*. 4*d*., what cost 13 galls. 3 qts. 1 pt.?
126. What income corresponds to a tax of £108. 1*s*. $4\frac{1}{2}$*d*., at 9*d*. in the pound?
127. A person who values his property at £3500. insures half of it at 4*s*. 6*d*., and the other half at 5*s*. 6*d*.; what is his net revenue?
128 If the price of 3 bushels of wheat is 16*s*. 9*d*., find the price of 12 qrs. 2 bush. 1 pk.?
129. Find the income corresponding to an income tax of £50. 7*s*. 1*d*., at 5*d*. in the pound?
130. A rate of 1*s*. 5*d*. is levied in a parish where the rateable rental is £360817. 10*s*.; find the amount.
131. If 55 reams of paper cost £53. 7*s*., what cost 990 reams?
132. If 86 cwt. 1 qr. 9 lbs. of wheat cost £43. 13*s*. $1\frac{1}{2}$*d*., how much must be given for 15 cwt. 2 qrs. 22 lbs.?
133. If the tax on £35. 10*s*. be £3. 10*s*., what is it on £110. 9*s*. 2*d*.?

72

134. If 80 sheep can be grazed in a field for 12 days, how many sheep can be grazed in the same field for 16 days?

135. If 95 sheep can be grazed in a field for 15 days, how long might 76 be grazed?

136. If 118 cwt. 5 lbs. cost £177. 19*s.* 6*d.*, what will 1 ton 6 cwt. cost?

137. What weight of sugar may be bought for £93. 12*s.* at £27. 14*s.* 8*d.* for 6 cwt. 2 qrs.?

138. If the yearly profits of an investment be £11. 9*s.* 6*d.* per cent., how much must be invested to produce £640. 13*s.* 9*d.*?

139. What ought a loaf to weigh when wheat is at 4*s.* per bushel, if it weighs 2 lbs. 8 oz. when wheat is at 5*s.* 3*d.* per bushel?

140. If the price of 1 oz. of gold is £3. 10*s.*, find the price of 16 ingots, each weighing 3 lbs. 7 oz. 14 dwt. 21 grs.

141. The rates of the express and mail trains on a railway are 40 and 28 miles per hour respectively: what time is saved by the fast train in 192 miles?

142. If 27 cwt. 1 qr. $3\frac{1}{2}$ lbs. of sugar cost £87. 6*s.*, what is the cost of 7 lbs.?

143. If a rental of £8050 be taxed at the rate of £11. 5*s.* for £100, what is the nett income?

144. What is the height of a steeple which casts a shadow of 510 ft. at the same time that a stick $4\frac{1}{2}$ ft. long casts a shadow of 8 ft. 6 in.

145. What is the length of shadow thrown by a spire 361 feet high, at the same time that a stick 6 feet 4 in. long throws a shadow of 6 feet?

146. A person whose income is £360 saves £12 per month: how much does he spend in 292 days?

147. A ship's crew of 150 men, and victualled for 11 months, pick up a wrecked crew, and then the victuals fail in 5 months: how many men were picked up?

148. If the crew had consisted of 120 men, with victuals for 11 months, and 56 had been picked up; how long would the provisions have held out?

149. If I gained $1\frac{1}{4}d.$ upon 2 lbs. of sugar, what would be the gain on 1 cwt. $2\frac{1}{2}$ qrs.?

150. Two meadows are of equal area; one is 910 feet long by 510 feet wide: find the length of the other, whose breadth is 663 feet.

151. How many yards of carpet 1 yard wide are equal to 420 yards of $\frac{3}{4}$ wide?

152. Find the width of a carpet of which 72 yards cover a room which is covered by 120 yards $\frac{3}{4}$ wide.

153. If 11 E. ells 3 qrs. cost £3. 10*s.* 1*d.*, how many yards may be purchased for £3. 14*s.* 11*d.*?

154. If 3 yds. 1 qr. cost 14*s.* 1*d.*, how many Fr. ells can be purchased for £10. 5*s.* 10*d.*?

155. If 84 Fl. ells 1 qr. cost £19. 19*s.*, what will be the cost of 50 E. ells. 3 qrs.?

156. 972 dollars are equivalent to 150 moidores: find the value of a dollar.

157. Find the value of the old English mark, if 126 marks are equal to 80 guineas.

158. Find the value of the old English noble, if 36 of them were equivalent to 720 groats.

159. If 2401 twigs be required to plant a hedge round a square field whose side is 840 yards, how many twigs will be required round an oblong whose length is 620 ft. and breadth 340 ft.?

160. If a clock gain $2\frac{1}{2}$ minutes in 3 hours 20 minutes, what will it gain in a week?

161. A clock which is correct at half past one in the afternoon, at 8 o'clock in the evening marks 47 minutes past 7: what is its hourly loss?

162. If the rent of a house for a year be £37, what is the

rent from June 17th to November 9th, both days inclusive?

163. How many days were there in a February, in which a person's keep amounted to £7. 7*s*. 5*d*. at £92. 15*s*. 5*d*. per annum?

164. The funds of an hospital fell from £7862. 8*s*. in 1864 to £6739. 4*s*. in 1865, and the number of patients in 64 were 385; how many patients less were accommodated in 65?

165. How many gallons of water must be mixed with 84 gallons of spirits at 12*s*. 6*d*., so that the mixture may be worth 10*s*. 6*d*. a gallon?

166. A garrison of 360 men has provisions for 6 months, how many men at the end of 5 months must depart to enable the rest to hold out 5 months longer?

167. A fort is provisioned for 3 weeks at 15 ounces a day for each man: how long will it hold out at $10\frac{1}{2}$ ounces each?

168. If the shilling loaf weigh 3 lbs. 7 oz. when flour is at 33*s*. 6*d*. per cwt., what does it weigh when flour is at 27*s*. 6*d*.?

169. Find the rent of 59 ac. 3 rds. 20 pls.; that of 12 ac. 3 rds. 30 pls. being £28. 8*s*. 9*d*.

170. The value of a bale of cotton is £23. 5*s*. when cotton is at $7\frac{3}{4}d$. per lb.; what is its weight?

171. If a person pay £67. 1*s*. 8*d*. income tax at 7*d*. in the £, what is his income?

172. In the year 1846, the produce of gold in Siberia amounted to 1526 Russian poods; calculate the amount in lbs. Troy, 8 poods = 351 lbs. Troy.

173. The moon revolves in her orbit in 27 dys. 7 hrs. 43 m. 11 sec.; through how many degrees, minutes, and seconds does she move in 7 days?

COMPOUND PROPORTION;

OR,

DOUBLE RULE OF THREE.

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1. If 2 men earn 15*s.* in 3 days, what will 7 men earn in 4 days?
2. If £73. 10*s.* keep 7 persons for 3 months, what sum will support 10 persons for 12 months?
3. If 7 horses can be kept 20 days for £14, what sum will keep 40 horses for 7 days?
4. If 7 men can be kept 20 days for £17. 10*s.*, how many men can be kept a week for £56?
5. If 15 men mow a field of 30 acres in $1\frac{1}{2}$ days, how many acres will 9 men mow in $1\frac{1}{4}$ days?
6. If 16 loaves keep a family of 4 people for 5 days, how long will 24 keep 12 people?
7. If a family of 6 persons receive in relief 2*s.* per week, what would a family of 7 receive in 4 days?
8. If 16 men dig a field 172 yards long and 84 broad, how many will dig one 215 yards long and 63 broad?
9. If a man walk 136 miles in 5 days of 8 hours each, how many hours per day must he walk to go 306 miles in 9 days?
10. If 20 men mow 18 acres in 3 days, in how many days will 30 women mow 12 acres, if 3 women do as much work as 2 men?
11. If 48 men do a piece of work in a certain time, how many men would do one-third of it in one-fifth of the time?

12. If 15 horses plough 20 acres in 4 days, how many acres will 9 horses plough in 11 days?
13. If 7 men can mow 35 acres of grass in 4 days, how many acres can 10 men mow in $3\frac{1}{2}$ days?
14. If 7 men earn £52. 10*s.* in 6 months, what sum will 10 men earn in 11 months?
15. If £250 gains £56. 5*s.* in $4\frac{1}{2}$ years, what sum will £620 gain in 6 years?
16. If 11 horses eat $19\frac{1}{4}$ bushels of oats in 7 days, how many bushels will 35 horses eat in 13 days?
17. If 7 men earn £9. 10*s.* 6*d.* in $10\frac{1}{2}$ days, how many men will earn £114. 6*s.* in $31\frac{1}{2}$ days?
18. If 7 horses can be kept 20 days for £14, how many may be kept 7 days for £28?
19. If 936 men consume 351 quarters of wheat in 7 months, how many men will consume 1470 quarters in 5 months?
20. If 17 men earn £249. 18*s.* in 21 weeks, in what time will 19 men earn £438. 18*s.*?
21. If 24 men can build a house in 45 days, in what time can 18 men build 2 such houses?
22. If the carriage of 2 cwt. 24 lbs. for 45 miles be 7*s.* 9*d.*, what will be the carriage of 17 cwt. 1 qr. 20 lbs. for 105 miles?
23. If $7\frac{1}{2}$ cwt. be carried 125 miles for 14*s.* 7*d.*, what will be the carriage of 3 tons for 200 miles?
24. If the carriage of 2 cwt. 3 qrs. for 192 miles be 12*s.*, how far may 8 cwt. 1 qr. be carried for £1. 4*s.*?
25. If 30 cwts. be carried 15 miles for £5. 8*s.* 9*d.*, how far can 90 cwts. be carried for £29?
26. If 8 men drink 2 casks of beer in 14 days, how many casks will 28 men drink in a year?
27. If 15 pecks of wheat serve 9 persons for 22 days, how long will 20 pecks serve 6 persons?

28. If 8 ounces of bread be sold for 6*d.* when wheat is 30*s.* a load, what is wheat a load when 12 ounces cost 8*d.*?
29. If 60 bushels of corn feed 6 horses for 50 days, in how many days will 15 horses consume 75 bushels?
30. If a quantity of provisions serve 800 men 14 weeks, at 18 ounces per day for each man; how many men will the same maintain for 16 weeks at 14 ounces?
31. If a family of 7 persons be supported 6 months for £52. 10*s.*, what sum will support 10 persons for 11 months?
32. If the interest on £250 amounts to £56. 5*s.* in $4\frac{1}{2}$ years, what is the interest of £620 for 6 years?
33. If the interest on £250 for 146 days be £5, in how many days will the interest on £420 amount to 12 guineas?
34. If a person travel 100 miles in 12 days of 8 hours each, how far can he travel in 15 days of 9 hours?
35. If a tradesman, with a capital of £500, gains £100 in 14 months, in what time will he gain £60. 10*s.* with a capital of £770?
36. If 20 men can perform a piece of work in 12 days, how many will perform a piece 3 times as great in one-fifth of the time?
37. If 15 oxen eat an acre of grass in 12 days, in how many days will 26 oxen eat 14 acres?
38. If a loaf weighing $69\frac{1}{2}$ ounces cost $7\frac{1}{2}d.$ when wheat is 25*s.* per load, what should the sixpenny loaf weigh when wheat is 40*s.* a load?
39. If a loaf weighing $8\frac{2}{3}$ ounces cost $2\frac{1}{4}d.$ when wheat is 35*s.* per load, what should the sixpenny loaf weigh when wheat is 57*s.* 9*d.* a load?
40. If 6 horses can plough 17 acres in 2 days, how many acres will 93 horses plough in $4\frac{1}{2}$ days?

41. If 27 men can do a piece of work in 14 days, working 10 hours a day; how many boys, working 8 hours a day, will do it in 45 days, the work of a boy being half that of a man?

42. If 4 oxen can be kept on 5 acres for 6 months, how many sheep can be kept on 56 acres for 5 months, if 6 sheep eat as much as an ox?

43. If 7 men, working 12 hours a day, earn £9. 10*s*. 6*d*. in 10½ days; what sum will 21 men, working 10 hours a day, earn in 26¼ days?

44. If 15 men, working 13 hours a day, earn £95. 1*s*. 3*d*. in 26 days; how many hours a-day must 17 men work that they may earn £84. 3*s*. in 24 days?

45. If 24 horses can be maintained 6 months for £20, when hay is 10*d*. a stone; how many horses can be maintained 8 months for £20, when hay is a shilling?

46. If eight horses consume 40 guineas' worth of hay in 6 months, when hay is at 8*d*. a stone; what will keep 7 horses 11 months, when hay is at 5*d*.?

47. If 18 men eat 16*s*. worth of bread in 3 days, when wheat is at 36*s*. per load; what sum will keep 45 men 27 days, when wheat is at 30*s*. per load.

48. If 12 men dig a trench 15 yards long by 4 broad in 3 days of 12 hours each, in how many days of 9 hours can 8 men dig a trench 20 yards long and 8 broad?

49. If 15 men working 10 hours a day reap 60 acres in 16 days; in what time would 20 women, working 12 hours, reap 98 acres, 7 men = 8 women?

50. If the carriage of 9 tons be £12. 2*s*. for 84 English miles, what should be the charge for the carriage of 27 tons for 100 Irish miles, 11 Irish = 14 English?

51. If 32 horses draw 20 tons 96 miles in 7 days, how many tons will 112 mules draw 120 miles in 10 days, if 3 horses = 5 mules?

52. If 20 men reap 34 acres in 2 days of 10 hours, how much can 45 women reap in 3 days of 8 hours, if 11 men = 17 women?
53. If 27 men do a piece of work in 14 days of 10 hours, how many hours a day must 24 boys work to do the same in 45 days; 1 man = 2 boys?
54. If the sixpenny loaf weigh 4½ lbs. when corn is at 6*s*. per bushel, what will be the price of 75 lbs. of bread when corn is at 72*s*. per quarter?
55. If 25 men dig a ditch 100 yards long 5 feet wide and 4½ feet deep, in 24 days of 9 hours; how many hours a day must 72 men work for 40 days in order to dig a ditch 400 yards long 6 feet wide and 5 feet deep?
56. If 5 compositors set up 12 sheets of 32 pages, each of which contains 45 lines of 60 letters, in 21 days; how long will it take 7 compositors to set up 21 sheets of 24 pages each, containing 54 lines of 64 letters?
57. If a man perform a journey of 168 miles in 7 days, walking 12 hours a day; in how many days will he walk 750 miles at 10 hours per day?
58. How many men would be killed in 1½ hours by 10 cannon firing 3 rounds in 4 minutes, if 30 cannon firing 4 rounds in 5 minutes kill 640 men in an hour?
59. If 100 loaves feed 21 men for 9 days, how many are required to feed 27 for 42 days?
60. If 5 acres graze 20 sheep for a week, how many will graze 13 for 35 days?
61. If £22. 19*s*. pay 10 men for 18 days' work, what sum will pay 23 men for 5 days?
62. If the gas consumed by 1 burner cost 17*s*. 9*d*. for 40 days, what will be the charge for another burner for 56 days, 200 c. ft. being consumed by the latter, while 168 are by the former?

FRACTIONS.

DEFINITIONS.

1. A FRACTION is a part or parts of a unit; as, *one-half, two-thirds, three-fourths,* which are thus expressed in figures, $\frac{1}{2}$, $\frac{2}{3}$, $\frac{3}{4}$.
2. The upper figure is called the *numerator;* the lower the *denominator;* and both are called the *terms* of the fraction.
3. The *denominator* shows how many equal parts the unit is divided into; and the *numerator,* how many such parts are taken. Thus, if an apple be divided into seven equal parts, *one* of these parts will be represented by $\frac{1}{7}$, *two* of them by $\frac{2}{7}$, *three* of them by $\frac{3}{7}$, &c.
4. A *proper fraction* is when the numerator is less than the denominator; as, $\frac{2}{3}$, $\frac{3}{4}$, $\frac{5}{8}$.
5. An *improper fraction* is when the numerator is equal to or greater than the denominator; $\frac{3}{2}$, $\frac{3}{3}$, $\frac{7}{4}$.
6. A *mixed number* is a whole number and a fraction; as, $4\frac{1}{2}$, $5\frac{4}{5}$.
7. A *compound fraction* is the fraction of a fraction: as, $\frac{2}{3}$ of $\frac{3}{4}$.
8. A *complex fraction* is one whose numerator and denominator are not whole numbers; as, $\frac{2\frac{1}{2}}{4}$, $\frac{4}{7\frac{1}{3}}$, $\frac{5\frac{1}{4}}{8\frac{2}{3}}$.

NOTE.—A fraction is not altered *in value* by multiplying or dividing both the numerator or denominator by any whole number; thus, $\frac{2}{3}$ is the same as $\frac{4}{6}$. For example:

If an apple be divided into three equal parts, and I take two of them, *I get as much apple* as if it was divided into six equal parts, and I took four of them. Also, $\frac{2}{3}$ of 1 is the same as $\frac{1}{3}$ of 2; $\frac{4}{7}$ of 1 the same as $\frac{1}{7}$ of 4, &c.

NOTATION.

Express in figures:—

1. One-half, one-third, one-fourth, and two-fifths.
2. Three-fourths, four-sevenths, and eight-ninths.
3. Eleven-eighths, and nineteen-twenty-fifths.
4. Four-tenths, eight-seventeenths, seventeen-sevenths.
5. A hundred-thousandths, and a thousand-hundredths.
6. Four and a half, eight and a seventh, seven and a tenth.
7. Eleven and three-eighths, and one and five-sevenths.
8. Two-thirds of eight, and five-sixteenths of nine.
9. One-half of two-thirds, and three-fourths of five-eighths.
10. One and a half elevenths, twelve and a half eighteenths, and four and a half hundredths.

NUMERATION.

Express in words:—

1. $\frac{1}{8}$, $\frac{1}{3}$, $\frac{1}{4}$, $\frac{2}{7}$, $\frac{1}{8}$, $\frac{1}{10}$, $\frac{3}{4}$.
2. $\frac{4}{7}$, $\frac{8}{9}$, $\frac{7}{10}$, $\frac{10}{7}$, $\frac{10}{11}$, $\frac{4}{25}$.
3. $\frac{11}{8}$, $\frac{19}{25}$, $\frac{84}{16}$, $\frac{150}{24}$, $\frac{8}{100}$.
4. $\frac{19}{11}$, $\frac{105}{16}$, $\frac{32}{19}$, $\frac{91}{100}$, $\frac{18}{35}$.
5. $\frac{384}{41}$, $\frac{57}{1000}$, $\frac{127}{100}$, $\frac{16}{900}$.
6. $\frac{100}{1000}$, $\frac{1000}{100}$, $\frac{315}{9674}$, $\frac{5218}{37500}$.
7. $4\frac{1}{2}$, $8\frac{1}{7}$, $5\frac{3}{8}$, $6\frac{4}{9}$, $18\frac{3}{10}$.
8. $18\frac{1}{3}$, $16\frac{2}{3}$, $1\frac{1}{4}$, $94\frac{7}{10}$.
9. $16\frac{11}{38}$, $310\frac{17}{18}$, $154\frac{2}{19}$.
10. $748\frac{1}{365}$, $41\frac{15}{144}$, $247\frac{101}{600}$.

11. $\frac{3}{5}$ of 16, $\frac{4}{7}$ of 11, $\frac{2}{9}$ of 76.
12. $\frac{1}{3}\frac{1}{3}$ of $9\frac{1}{2}$, $\frac{2}{6}\frac{7}{0}$ of $14\frac{7}{8}$.
13. $\frac{9}{1}\frac{0}{4}$ of $23\frac{7}{1}\frac{2}{3}$, $\frac{1}{8}\frac{6}{0}$ of $118\frac{9}{1}\frac{0}{0}$.
14. $\frac{1}{2}$ of $\frac{1}{4}$, $\frac{2}{3}$ of $\frac{3}{4}$, $\frac{3}{5}$ of $\frac{7}{8}$.
15. $\frac{3}{4}$ of $\frac{2}{9}$, $\frac{5}{6}$ of $\frac{7}{8}$, $\frac{1}{2}\frac{8}{1}$ of $\frac{1}{2}\frac{6}{0}$.
16. $\frac{3}{7}$ of $\frac{5}{8}$ of $\frac{7}{1}\frac{4}{2}$, $\frac{2}{1}\frac{5}{0}$ of $\frac{4}{1}\frac{4}{1}$ of $1\frac{5}{8}$.
17. $\frac{9}{2}\frac{7}{4}$ of $\frac{2}{6}\frac{7}{9}$ of $4\frac{5}{1}\frac{8}{9}$.
18. $\frac{5}{1}\frac{7}{3}$ of $\frac{7}{1}\frac{9}{0}$ of $\frac{5}{1}\frac{3}{7}$ of $\frac{1}{9}$.
19. $\frac{3\frac{1}{2}}{20}$, $\frac{8\frac{1}{2}}{94}$, $\frac{17\frac{1}{3}}{60}$, and $\frac{25\frac{1}{2}}{18}$.
20. $\frac{4\frac{1}{2}}{16\frac{1}{3}}$, $\frac{7\frac{2}{3}}{18\frac{4}{9}}$, $\frac{3\frac{5}{8}}{2\frac{1}{2}}$, and $\frac{7\frac{5}{6}}{11\frac{1}{3}}$.

PRIME NUMBERS.

1. Write down all the prime numbers between 1 and 20.
2. Write down all the prime numbers between 20 and 50.
3. Write down all the prime numbers between 50 and 80.
4. Write down all the prime numbers between 80 and 100.
5. Write down all the prime numbers between 100 and 120.
6. Write down all the prime numbers between 120 and 140.
7. Write down all the prime numbers between 140 and 180.
8. Write down all the prime numbers between 180 and 200.
9. Write down all the prime numbers between 200 and 230.
10. Write down all the prime numbers between 230 and 260.
11. Write down all the prime numbers between 260 and 280.

COMPOSITE NUMBERS.

1. Resolve 30, 42, 66, and 70, into their prime factors.
2. Resolve 105, 110, 154, and 165, into their prime factors.
3. Resolve 231, 273, 429, and 74, into their prime factors.
4. Resolve 85, 102, 115, and 462, into their prime factors.
5. Resolve 36, 60, 90, and 80, into their prime factors.
6. Resolve 210, 147, 175, and 315, into their prime factors.
7. Resolve 100, 120, 300, and 119, into their prime factors.
8. Resolve 126, 441, 500, and 609, into their prime factors.
9. Resolve 243, 450, 319, and 143, into their prime factors.
10. Resolve 168, 1225, and 891, into their prime factors.
11. Resolve 1848, 2200, and 2751, into their prime factors.
12. Resolve 1188, 1485, and 6223, into their prime factors.
13. Resolve 567, 1071, and 3077, into their prime factors.
14. Resolve 98735, 18183, and 47089, into their prime factors.
15. Resolve 27251, and 29044211, into their prime factors.

GREATEST COMMON MEASURE.

Find the Greatest Common Measure of A and B:—

	A.	B.
1.	28915	31495
2.	3556	3444
3.	300309	1509
4.	2931	27450
5.	9521	6197
6.	1134	1584
7.	10283	6441
8.	2125	11390
9.	315911	350387
10.	58363	2602
11.	1856	4466
12.	14186	13667
13.	3761034	1081
14.	1847	8209
15.	236511	37499
16.	95469	359784
17.	2299885	18607
18.	93208	13786
19.	49561	2442641
20.	5187	5850
21.	43365	44688
22.	11050	35581
23	6281	326041
24.	109056	179712
25.	13536	23148
26.	888800	40359600
27.	147008443	5547

LEAST COMMON MULTIPLE.

Find the Least Common Multiple of,—

1. 2, 3, 4, 6, and 12.
2. 3, 4, 6, 8, and 12.
3. 2, 3, 4, 5, and 6.
4. 12, 20, 30, 15, and 60.
5. 8, 9, 6, 12, and 3.
6. 2, 3, 4, 5, 6, and 7.
7. 4, 18, 12, and 8.
8. 4, 5, 6, 7, and 8.
9. 2, 3, 5, 7, and 11.
10. 36, 42, 100, and 450.
11. 2, 4, 3, 9, 5, and 25.
12. 6, 12, 9, 15, and 75.
13. 4, 12, 36, 20, and 25.
14. 14, 21, 28, and 35.
15. 12, 15, 20, 84, and 105.
16. 3, 11, 15, 22, and 21.
17. 36, 63, 84, and 28.
18. 675, 225, and 315.
19. 63, 35, 135, and 75.
20. 4, 7, 12, 21, and 34.
21. 5, 6, 7, 8, and 9.
22. 7, 9, 12, and 15.
23. 2, 4, 6, 8, 10, and 12.
24. 5, 10, 12, 14, and 16.
25. 24, 32, 57, and 76.
26. 57, 38, 96, and 152.
27. 24, 39, 104, and 376.
28. 4, 9, 10, 12, and 18.

29. 10, 20, 30, 40, and 50.
30. 24, 54, 72, and 84.
31. 34, 51, 56, and 72.
32. 24, 32, 54, and 45.
33. 144, 360, 864, and 80.
34. 10, 14, 18, 22, and 77.
35. 10, 16, 14, 11, 28, and 88.
36. 5, 7, 8, 9, 12, 16, 35, and 42.
37. 72, 36, 96, 25, 30, and 40.
38. 36, 46, 69, 115, and 45.
39. 12, 11, 9, 8, 7, 22, 18, and 14.
40. 12, 15, 35, 56, 32, and 40.
41. 6, 8, 11, 16, 20, and 44.
42. 1, 2, 3, 4, 5, 6, 7, 8, 9, and 10.
43. 25, 4, 49, 35, and 20.
44. 6, 35, 231, 55, 198, and 132.
45. 8, 9, 13, 39, 65, and 45.
46. 9, 12, 14, 21, 30, 35, and 45.
47. 16, 18, 20, 24, 45, and 30.
48. 51, 68, 34, 187, and 44.
49. 36, 45, 84, 24, 40, and 63.
50. 38, 57, 95, 15, 10, and 19.
51. 110, 132, 77, and 84.
52. 54, 45, 36, 63, and 42.
53. 20, 30, 40, 50, 60, and 80.
54. 9, 20, 50, 45, and 15.
55. 27, 35, 28, 36, 14, and 42.
56. 64, 48, 144, 96, and 54.
57. 120, 80, 90, 100, and 125.
58. 70, 80, 14, 60, 24, and 35.
59. 84, 72, 63, 77, and 98.
60. 90, 80, 45, 48, and 12.
61. 16, 20, 9, 12, 21, and 35.
62. 45, 35, 75, 25, and 100

REDUCTION.

CASE I.—To reduce a fraction to its lowest terms.

1. Reduce $\frac{3}{6}$, $\frac{4}{8}$, $\frac{4}{12}$, $\frac{10}{15}$, $\frac{14}{21}$, $\frac{14}{35}$, $\frac{27}{36}$, and $\frac{16}{48}$, to their lowest terms.
2. Reduce $\frac{48}{80}$, $\frac{21}{28}$, $\frac{35}{42}$, $\frac{21}{24}$, $\frac{24}{30}$, $\frac{18}{42}$, $\frac{40}{48}$, and $\frac{45}{54}$, to their lowest terms.
3. Reduce $\frac{56}{63}$, $\frac{108}{120}$, $\frac{28}{70}$, $\frac{46}{76}$, $\frac{420}{840}$, $\frac{36}{39}$, $\frac{480}{720}$, and $\frac{540}{720}$, to their lowest terms.
4. Reduce $\frac{288}{720}$, $\frac{320}{790}$, $\frac{2560}{5760}$, $\frac{3960}{5760}$, $\frac{2080}{6840}$, and $\frac{195}{210}$, to their lowest terms.
5. Reduce $\frac{435}{957}$, $\frac{621}{783}$, $\frac{4968}{8904}$, $\frac{46080}{49152}$, and $\frac{9720}{10368}$, to their lowest terms.
6. Reduce $\frac{29160}{31104}$, $\frac{13824}{49152}$, $\frac{1720}{8850}$, $\frac{11050}{35581}$, and $\frac{2375}{62500}$, to their lowest terms.
7. Reduce $\frac{68040}{72576}$, $\frac{207}{240}$, $\frac{3094}{3042}$, $\frac{3444}{3556}$, and $\frac{5665}{5720}$, to their lowest terms.
8. Reduce $\frac{7944}{8916}$, $\frac{31866}{100110}$, $\frac{100005}{314175}$, and $\frac{8888800}{40359600}$, to their lowest terms.
9. Reduce $\frac{43365}{44688}$, $\frac{48510}{49005}$, $\frac{3184}{5760}$, and $\frac{26664}{1210788}$, to their lowest terms.
10. Reduce $\frac{1397851 2}{1439870 4}$, $\frac{95469}{859784}$, and $\frac{1093750}{1000000}$, to their lowest terms.
11. Reduce $\frac{22288}{40320}$, $\frac{13786}{93208}$, $\frac{19567}{156093}$, and $\frac{4494}{8904}$, to their lowest terms.
12. Reduce $\frac{1305}{2871}$, $\frac{1863}{2214}$, $\frac{5187}{17580}$, and $\frac{586671}{4707799}$, to their lowest terms.
13. Reduce $\frac{10143}{12054}$, $\frac{12103}{49950}$, $\frac{3035555}{3128328}$, and $\frac{6666}{3026097}$, to their lowest terms.

CASE II.—Reduce to equivalent fractions with the Least Common Denominator:—

1. $\frac{1}{2}$, $\frac{2}{3}$, $\frac{3}{4}$, $\frac{4}{5}$.
2. $\frac{1}{2}$, $\frac{2}{4}$, $\frac{3}{5}$.
3. $\frac{1}{2}$, $\frac{1}{3}$, $\frac{1}{5}$, $\frac{1}{12}$.
4. $\frac{2}{3}$, $\frac{7}{12}$, $\frac{1}{12}$, $\frac{11}{18}$.
5. $\frac{7}{8}$, $\frac{8}{9}$, $\frac{9}{10}$, $\frac{11}{12}$.
6. $\frac{2}{3}$, $\frac{3}{4}$, $\frac{11}{18}$, $\frac{4}{5}$.
7. $\frac{5}{12}$, $\frac{6}{18}$, $\frac{11}{16}$, $\frac{1}{2}$.
8. $\frac{6}{20}$, $\frac{1}{33}$, $\frac{1}{22}$, $\frac{1}{7}$.
9. $\frac{1}{12}$, $\frac{3}{36}$, $\frac{5}{39}$, $\frac{1}{3}$.
10. $\frac{1}{33}$, $\frac{6}{11}$, $\frac{1}{4}$, $\frac{9}{12}$.
11. $\frac{1}{17}$, $\frac{1}{34}$, $\frac{1}{2}$, $\frac{6}{51}$.
12. $\frac{1}{7}$, $\frac{1}{9}$, $\frac{1}{10}$, $\frac{1}{4}$.
13. $\frac{3}{5}$, $\frac{4}{6}$, $\frac{5}{9}$, $\frac{11}{12}$.
14. $\frac{7}{12}$, $\frac{11}{66}$, $\frac{1}{18}$, $\frac{13}{30}$.
15. $\frac{11}{33}$, $\frac{47}{44}$, $\frac{6}{132}$, $\frac{1}{3}$.
16. $\frac{11}{19}$, $\frac{3}{38}$, $\frac{17}{95}$, $\frac{19}{57}$.
17. $\frac{3}{5}$, $\frac{5}{18}$, $\frac{4}{37}$, $\frac{11}{55}$.
18. $\frac{1}{10}$, $\frac{3}{30}$, $\frac{7}{30}$, $\frac{11}{30}$.
19. $\frac{16}{33}$, $\frac{17}{24}$, $\frac{3}{36}$, $\frac{11}{30}$.
20. $\frac{7}{18}$, $\frac{8}{36}$, $\frac{9}{24}$, $\frac{1}{3}$.
21. $\frac{2}{3}$, $\frac{3}{4}$, $\frac{4}{5}$, $\frac{5}{7}$.
22. $\frac{1}{10}$, $\frac{1}{11}$, $\frac{1}{18}$, $\frac{1}{2}$.
23. $\frac{3}{7}$, $\frac{5}{8}$, $\frac{4}{9}$, $\frac{1}{2}$.
24. $\frac{1}{36}$, $\frac{5}{18}$, $\frac{4}{9}$, $\frac{1}{2}$.
25. $\frac{1}{24}$, $\frac{17}{60}$, $\frac{1}{3}$, $\frac{5}{18}$.
26. $\frac{1}{100}$, $\frac{1}{60}$, $\frac{1}{30}$, $\frac{1}{20}$.
27. $\frac{1}{18}$, $\frac{1}{24}$, $\frac{5}{36}$, $\frac{7}{24}$.
28. $\frac{5}{36}$, $\frac{11}{33}$, $\frac{13}{24}$, $\frac{5}{18}$.
29. $\frac{3}{4}$, $\frac{5}{6}$, $\frac{7}{12}$, $\frac{5}{8}$.
30. $\frac{1}{6}$, $\frac{3}{18}$, $\frac{11}{12}$, $\frac{13}{24}$.
31. $\frac{1}{6}$, $\frac{7}{10}$, $\frac{3}{15}$, $\frac{11}{30}$.
32. $\frac{3}{5}$, $\frac{7}{12}$, $\frac{4}{9}$.
33. $\frac{11}{19}$, $\frac{14}{28}$, $\frac{23}{38}$.
34. $\frac{7}{9}$, $\frac{11}{13}$, $\frac{21}{26}$, $\frac{13}{52}$.
35. $\frac{3}{4}$, $\frac{5}{9}$, $\frac{5}{12}$, $\frac{13}{36}$.
36. $\frac{3}{5}$, $\frac{5}{12}$, $\frac{4}{5}$, $\frac{7}{20}$.
37. $\frac{7}{8}$, $\frac{3}{5}$, $\frac{3}{8}$, $\frac{6}{7}$.
38. $\frac{7}{11}$, $\frac{1}{9}$, $\frac{17}{18}$, $\frac{13}{15}$.
39. $\frac{4}{11}$, $\frac{7}{6}$, $\frac{15}{16}$, $\frac{1}{2}$.
40. $\frac{11}{24}$, $\frac{15}{20}$, $\frac{29}{39}$, $\frac{31}{26}$.
41. $\frac{1}{7}$, $\frac{4}{9}$, $\frac{5}{14}$, $\frac{7}{12}$.
42. $\frac{1}{12}$, $\frac{1}{16}$, $\frac{3}{21}$, $\frac{1}{60}$.
43. $\frac{6}{7}$, $\frac{8}{9}$, $\frac{7}{12}$, $\frac{13}{15}$.
44. $\frac{1}{3}$, $\frac{1}{4}$, $\frac{1}{5}$, $\frac{1}{6}$, $\frac{1}{7}$.
45. $\frac{2}{10}$, $\frac{7}{100}$, $\frac{9}{1000}$, $\frac{1}{10000}$.
46. $\frac{3}{10}$, $\frac{7}{18}$, $\frac{9}{20}$, $\frac{27}{100}$.
47. $\frac{7}{10}$, $\frac{3}{20}$, $\frac{3}{100}$, $\frac{1}{2100}$.
48. $\frac{5}{12}$, $\frac{17}{18}$, $\frac{3}{10}$, $\frac{11}{12}$.
49. $\frac{1}{7}$, $\frac{3}{14}$, $\frac{5}{21}$, $\frac{1}{33}$.
50. $\frac{6}{35}$, $\frac{8}{45}$, $\frac{9}{100}$.
51. $\frac{1}{2}$, $\frac{3}{4}$, $\frac{5}{6}$, $\frac{7}{10}$.
52. $\frac{1}{2}$, $\frac{1}{3}$, $\frac{1}{7}$, $\frac{1}{9}$.
53. $\frac{1}{13}$, $\frac{3}{26}$, $\frac{5}{78}$, $\frac{1}{6}$.
54. $\frac{5}{56}$, $\frac{13}{48}$, $\frac{2}{9}$.
55. $\frac{7}{12}$, $\frac{5}{16}$, $\frac{8}{21}$, $\frac{1}{24}$.
56. $\frac{1}{11}$, $\frac{1}{13}$, $\frac{1}{14}$, $\frac{1}{84}$.
57. $\frac{3}{7}$, $\frac{5}{11}$, $\frac{8}{13}$, $\frac{4}{35}$.
58. $\frac{4}{21}$, $\frac{2}{66}$, $\frac{1}{132}$, $\frac{7}{104}$.
59. $\frac{1}{24}$, $\frac{5}{48}$, $\frac{13}{32}$, $\frac{1}{3}$.
60. $\frac{1}{24}$, $\frac{3}{36}$, $\frac{2}{48}$, $\frac{9}{12}$.
61. $\frac{1}{108}$, $\frac{1}{108}$, $\frac{1}{17}$, $\frac{1}{18}$.
62. $\frac{1}{21}$, $\frac{8}{9}$, $\frac{11}{12}$, $\frac{5}{6}$.
63. $\frac{11}{12}$, $\frac{5}{36}$, $\frac{3}{48}$, $\frac{4}{13}$.
64. $\frac{1}{3}$, $\frac{1}{5}$, $\frac{1}{15}$, $\frac{1}{16}$.

CASE III.—To reduce a mixed number to its equivalent improper fraction.

1. Reduce $6\frac{6}{8}$, $15\frac{8}{9}$, $23\frac{11}{13}$, and $16\frac{6}{7}$, to their equivalent improper fractions.
2. Reduce $39\frac{3}{5}$, $17\frac{4}{5}$, $19\frac{7}{9}$, and $27\frac{4}{7}$, to their equivalent improper fractions.
3. Reduce $12\frac{211}{367}$, $9\frac{72}{143}$, $132\frac{7}{16}$, and $26\frac{10}{19}$, to their equivalent improper fractions.
4. Reduce $82\frac{5}{13}$, $100\frac{18}{20}$, $514\frac{5}{16}$, and $13\frac{3}{16}$, to their equivalent improper fractions.
5. Reduce $5\frac{163}{19774}$, $47\frac{3147}{6400}$, and $1209\frac{187}{314}$, to their equivalent improper fractions.
6. Reduce $360\frac{10}{17}$, $976\frac{21}{30}$, and $842\frac{17}{30}$, to their equivalent improper fractions.
7. Reduce $687\frac{36}{111}$, $769\frac{111}{234}$, and $807\frac{101}{621}$, to their equivalent improper fractions.

CASE IV.—To reduce an improper fraction to its equivalent whole or mixed number.

1. Reduce $\frac{361}{26}$, $\frac{213}{17}$, and $\frac{143}{13}$, to their equivalent whole or mixed numbers.
2. Reduce $\frac{1603}{100}$, $\frac{3848}{21}$, and $\frac{1245}{23}$, to their equivalent whole or mixed numbers
3. Reduce $\frac{5213}{89}$, $\frac{4779}{70}$, and $\frac{4446}{354}$, to their equivalent whole or mixed numbers.
4. Reduce $\frac{10352}{29}$, $\frac{64237}{698}$, and $\frac{40763861}{20019}$, to their equivalent whole or mixed numbers.
5. Reduce $\frac{663819}{23710}$, $\frac{6285679}{136}$, and $\frac{23967992}{9849}$, to their equivalent whole or mixed numbers.
6. Reduce $\frac{3979447}{6400}$, $\frac{14003564}{1871}$, and $\frac{48392760}{95870}$, to their equivalent whole or mixed numbers.
7. Reduce $\frac{73800964}{2800}$ and $\frac{471283640}{284248}$, to their equivalent whole or mixed numbers.

CASE V.—To reduce a compound fraction to its equivalent simple fraction.

1. Reduce $\frac{1}{2}$ of $\frac{3}{4}$ to its equivalent simple fraction.
2. Reduce $\frac{3}{4}$ of $\frac{5}{6}$ to its equivalent simple fraction.
3. Reduce $\frac{1}{2}$ of $\frac{5}{6}$, $\frac{2}{3}$ of $\frac{4}{7}$, $\frac{3}{5}$ of $\frac{1}{3}$, and $\frac{3}{5}$ of $\frac{4}{5}$, to their equivalent simple fractions.
4. Reduce $\frac{1}{2}$ of $\frac{7}{10}$, $\frac{1}{3}$ of $\frac{1}{2}$, $\frac{1}{3}$ of $\frac{1}{4}$, and $\frac{2}{3}$ of $\frac{1}{3}$, to their equivalent simple fractions.
5. Reduce $\frac{3}{4}$ of $\frac{7}{8}$, $\frac{7}{8}$ of $\frac{3}{4}$, $\frac{3}{5}$ of $\frac{7}{4}$, and $\frac{4}{7}$ of $\frac{4}{7}$, to their equivalent simple fractions.
6. Reduce $\frac{1}{2}$ of $\frac{3}{4}$ of $\frac{5}{7}$, $\frac{3}{5}$ of $\frac{4}{5}$ of $\frac{5}{7}$, and $\frac{1}{3}$ of $\frac{1}{6}$ of $\frac{1}{7}$, to their equivalent simple fractions.
7. Reduce $\frac{2}{3}$ of $\frac{6}{7}$, $\frac{5}{12}$ of $\frac{2}{15}$, $\frac{14}{15}$ of $\frac{3}{63}$, and $\frac{3}{5}$ of $\frac{3}{10}$, to their equivalent simple fractions.
8. Reduce $\frac{2}{11}$ of $\frac{5}{8}$ of $\frac{33}{5}$, $\frac{3}{5}$ of $\frac{3}{10}$ of $\frac{15}{16}$, and $\frac{3}{5}$ of $\frac{1}{6}$ of $\frac{10}{11}$, to their equivalent simple fractions.
9. Reduce $\frac{3}{7}$ of $\frac{3}{7}$ of $\frac{5}{12}$, $\frac{4}{7}$ of $\frac{5}{6}$ of $\frac{7}{10}$, and $\frac{3}{7}$ of $\frac{5}{8}$ of $\frac{8}{9}$, to their equivalent simple fractions.
10. Reduce $\frac{1}{2}$ of $\frac{7}{10}$ of $\frac{3}{12}$, and $\frac{5}{6}$ of $\frac{3}{8}$ of $\frac{6}{7}$, to their equivalent simple fractions.
11. Reduce $\frac{3}{7}$ of $\frac{7}{9}$ of $\frac{4}{7}$ of $\frac{3}{5}$, and $\frac{5}{21}$ of $\frac{4}{5}$ of $\frac{7}{64}$ of $17\frac{3}{5}$, to their equivalent simple fractions.
12. Reduce $\frac{7}{12}$ of $\frac{4}{35}$ of $12\frac{1}{2}$, and $\frac{13}{17}$ of $\frac{25}{153}$ of $\frac{119}{130}$, to their equivalent simple fractions.
13. Reduce $\frac{3}{4}$ of $\frac{5}{6}$ of $\frac{9}{10}$, and $\frac{8}{7}$ of $\frac{13}{39}$ of $12\frac{15}{19}$, to their equivalent simple fractions.
14. Reduce $\frac{1}{2}$ of $\frac{1}{3}$ of $\frac{1}{4}$ of $\frac{1}{5}$, and $\frac{4}{5}$ of $\frac{3}{4}$ of $\frac{6}{8}$ of $\frac{7}{8}$, to their equivalent simple fractions.
15. Reduce $\frac{3}{7}$ of $\frac{91}{125}$, $\frac{25}{133}$ of $\frac{11}{30}$, and $\frac{3}{4}$ of $7\frac{1}{4}$, to their equivalent simple fractions.
16. Reduce $\frac{4}{5}$ of $\frac{6}{7}$ of $\frac{5}{9}$ of $\frac{10}{11}$, and $\frac{1}{3}$ of $\frac{3}{5}$ of $\frac{7}{9}$ of $2\frac{3}{8}$, to their equivalent simple fractions.

17. Reduce $\frac{3}{5}$ of $\frac{11}{12}$ of $\frac{14}{33}$, and $\frac{8}{13}$ of $\frac{3}{5}$ of $\frac{26}{35}$ of $\frac{75}{92}$, to their equivalent simple fractions.

18. Reduce $\frac{11}{13}$ of $\frac{6}{7}$ of $\frac{14}{15}$ of $\frac{5}{7}$, and $\frac{11}{13}$ of $\frac{6}{11}$ of $\frac{4}{5}$ of $\frac{5}{6}$, to their equivalent simple fractions.

19. Reduce $\frac{3}{5}$ of $\frac{5}{7}$ of $\frac{8}{11}$, $\frac{3}{5}$ of $\frac{5}{7}$ of $\frac{4}{25}$, and $\frac{3}{5}$ of $\frac{5}{6}$ of $\frac{7}{18}$, to their equivalent simple fractions.

20. Reduce $\frac{3}{7}$ of $\frac{5}{12}$ of $\frac{1}{3}$, $\frac{6}{7}$ of $\frac{11}{12}$ of $7\frac{1}{3}$, and $\frac{4}{7}$ of $\frac{5}{9}$ of $\frac{9}{17}$, to their equivalent simple fractions.

21. Reduce $\frac{3}{11}$ of $\frac{8}{9}$ of $\frac{6}{17}$ of $5\frac{1}{3}$, and $\frac{7}{15}$ of $\frac{5}{19}$ of $\frac{3}{4}$ of $1\frac{1}{3}$, to their equivalent simple fractions.

22. Reduce $\frac{9}{10}$ of $\frac{15}{27}$ of $\frac{16}{32}$ of $\frac{17}{64}$, and $\frac{7}{15}$ of $\frac{11}{30}$ of $\frac{27}{28}$ of $\frac{5}{6}$, to their equivalent simple fractions.

23. Reduce $\frac{7}{10}$ of $\frac{11}{12}$ of $\frac{13}{15}$ of $\frac{1}{2}$, and $\frac{1}{4}$ of $\frac{4}{9}$ of $\frac{3}{7}$ of $\frac{3}{4}$ of $18\frac{7}{13}$, to their equivalent simple fractions.

24. Reduce $\frac{8}{15}$ of $\frac{7}{16}$ of $\frac{10}{34}$ of $\frac{11}{19}$ of $\frac{19}{22}$, and $\frac{2}{3}$ of $\frac{7}{8}$ of $6\frac{2}{3}$, to their equivalent simple fractions.

25. Reduce $\frac{14}{30}$ of $\frac{10}{35}$ of $\frac{15}{14}$ of $\frac{8}{34}$ of $\frac{11}{39}$ of $\frac{7}{16}$ of $\frac{15}{36}$ of $\frac{17}{42}$, to its equivalent simple fraction.

26. Reduce $\frac{19}{28}$ of $\frac{11}{30}$ of $\frac{17}{18}$ of $\frac{34}{38}$ of $\frac{16}{20}$ of $\frac{20}{22}$ of $\frac{35}{38}$ of $\frac{19}{17}$, to its equivalent simple fraction.

27. Reduce $\frac{4}{17}$ of $\frac{5}{16}$ of $\frac{7}{25}$ of $\frac{15}{20}$ of $\frac{9}{25}$ of $\frac{17}{18}$ of $\frac{11}{30}$ of $\frac{19}{33}$, to its equivalent simple fraction.

28. Reduce $\frac{8}{19}$ of $\frac{9}{16}$ of $\frac{11}{40}$ of $\frac{17}{30}$ of $\frac{20}{34}$ of $\frac{8}{17}$ of $\frac{9}{16}$, to its equivalent simple fraction.

29. Reduce $\frac{16}{35}$ of $\frac{11}{20}$ of $\frac{9}{34}$ of $\frac{13}{18}$ of $\frac{40}{104}$ of $\frac{10}{44}$ of $\frac{7}{8}$ of $\frac{17}{27}$, to its equivalent simple fraction.

30. Reduce $\frac{14}{42}$ of $\frac{17}{18}$ of $\frac{11}{20}$ of $\frac{26}{30}$ of $\frac{10}{13}$ of $\frac{14}{25}$ of $\frac{63}{54}$ of $\frac{36}{38}$ of $\frac{9}{14}$, to its equivalent simple fraction.

31. Reduce $\frac{3}{5}$ of $\frac{4}{5}$ of $\frac{5}{6}$ of $\frac{7}{10}$ of $\frac{9}{14}$ of $\frac{11}{20}$ of $\frac{7}{8}$ of $\frac{5}{13}$ of $\frac{16}{21}$ of $\frac{10}{17}$ of $\frac{27}{20}$ of $\frac{6}{7}$, to its equivalent simple fraction.

32. Reduce $\frac{2}{7}$ of $\frac{4}{9}$ of $\frac{7}{8}$ of $\frac{22}{5}$ of $\frac{5}{11}$ of $\frac{21}{4}$ of $\frac{2}{3}$ of $\frac{5}{7}$ of $\frac{13}{101}$ of $10\frac{1}{10}$, to its equivalent simple fraction.

CASE VI.—To find the value of a Fraction.

1. Find the values of $\frac{1}{3}\frac{8}{7}$ of £2. 3*s*. 8*d*., $\frac{7}{1}\frac{9}{0}\frac{}{0}$ of 13*s*. $1\frac{1}{4}d$., $\frac{9}{3}\frac{}{0}$ of £3800, and $\frac{2}{3}$ of a crown.
2. Find the values of $\frac{1}{1}\frac{9}{8}$ of 1*s*., $\frac{5}{1}\frac{}{8}$ of 1 guinea, $\frac{1}{2}\frac{5}{1}$ of a cwt., $\frac{3}{7}$ of 1*s*., and $\frac{4}{5}$ of a ton.
3. Find the values of $\frac{4}{5}$ of a mile, $\frac{7}{8}$ of a league, $\frac{3}{8}$ of 1 oz. 4 dwt., and $\frac{5}{8}$ of 27 shillings.
4. Find the values of $\frac{3}{8}$ of a bushel, $\frac{5}{7}$ of a peck, $\frac{1}{2}\frac{5}{1}\frac{8}{0}\frac{9}{0}$ of £1., $\frac{3}{5}$ of a lb. Troy, and $\frac{7}{1}\frac{}{0}\frac{}{0}$ of £2. 10*s*.
5. Find the values of $\frac{5}{9}$ of an Eng. ell, $\frac{4}{7}$ of a lb. Avoir., $\frac{2}{5}\frac{9}{0}$ of £1, $\frac{5}{8}$ of a guinea, and $\frac{1}{2}\frac{7}{1}$ of a cwt.
6. Find the values of $\frac{1}{1}\frac{3}{9}$ of a moidore, $\frac{3}{1}\frac{}{5}$ of a month, and $\frac{1}{3}\frac{1}{1}\frac{9}{0}\frac{5}{7}\frac{}{8}$ of cwt., $\frac{3}{5}$ of 5*s*., and $\frac{7}{4}\frac{}{0}$ of £1.
7. Find the values of $\frac{9}{1}\frac{7}{4}\frac{3}{4}\frac{}{0}$ of a day, $\frac{1}{1}\frac{7}{0}\frac{9}{0}\frac{}{8}$ of a guinea, $\frac{5}{8}\frac{3}{0}$ of a crown, $\frac{5}{1}\frac{}{8}$ of 1*s*. 6*d*., and $\frac{7}{1}\frac{}{8}$ of a guinea.
8. Find the values of $\frac{9}{1}\frac{}{1}$ of a day, $\frac{3}{8}\frac{}{8}$ of a mile, $\frac{5}{2}\frac{}{8}$ of 13*s*. 4*d*., and $\frac{3}{1}\frac{}{4}$ of 10*s*. 6*d*.
9. Find the values of $\frac{1}{3}$ of $\frac{2}{7}$ of £5. 18*s*. 5*d*., $\frac{1}{3}$ of $\frac{1}{1}\frac{9}{0}\frac{2}{0}$ of a day, and $\frac{5}{1}\frac{}{8}$ of a cwt.
10. Find the values of $\frac{5}{8}$ of $\frac{4}{5}$ of £1710, $\frac{5}{2}\frac{}{8}$ of $5\frac{1}{3}$ of £273. 2*s*. 6*d*., and $\frac{3}{1}\frac{}{0}$ of a day.
11. Find the values of $\frac{3}{4}$ of $\frac{5}{7}$ of 13*s*. 4*d*., $\frac{1}{3}\frac{2}{6}\frac{2}{0}$ of a lb. Troy, and $\frac{4}{5}$ of a yard.
12. Find the values of $\frac{7}{1}\frac{9}{4}\frac{}{8}\frac{}{0}$ of 365 days, $\frac{3}{1}\frac{}{8}$ of 28 days, and $\frac{4}{5}$ of a crown.
13. Find the values of $\frac{9}{1}\frac{}{4}$ of cwt., $\frac{1}{2}\frac{1}{8}\frac{}{0}$ of a mile, $\frac{2}{1}\frac{1}{0}\frac{3}{0}\frac{}{0}\frac{}{0}\frac{}{0}$ of a day, and $\frac{1}{1}\frac{3}{8}$ of a lb. Troy.
14. Find the values of $\frac{3}{1}\frac{}{8}$ of 54 gallons, $\frac{7}{8}$ of 252 gallons, and $\frac{1}{1}\frac{3}{2}$ of a pound.
15. Find the values of $\frac{4}{1}\frac{8}{8}\frac{3}{2}\frac{}{4}$ of a moidore, $\frac{3}{1}\frac{}{0}\frac{}{0}$ of £187. 6*s*. 7*d*., and $\frac{4}{1}\frac{9}{6}\frac{}{0}$ of a day.
16. Find the values of $\frac{1}{1}\frac{1}{4}\frac{0}{8}\frac{2}{5}\frac{7}{0}$ of a cwt., $\frac{2}{1}\frac{5}{0}\frac{7}{0}\frac{}{0}$ of a cwt., and $\frac{3}{7}$ of £5. 18*s*. 5*d*.

CASE VII.—To find what fraction one quantity is of another.

What fraction is:—

1. 1 of 11; and 2 of 5?
2. 3 of 8; 7 of 26; 7 of 28; 15 of 35?
3. 27 of 84; 37 of 69; 108 of 347.
4. 42 of 48; 49 of 504; and 56 of 240?
5. 224 of 504; 1092 of 1260; 105 of 504; and 495 of 528?
6. 85 of 1224; 18 of 5; 27 of 16; 25 of 15; and 84 of 63?
7. 462 of 441; 156 of 42; 1102 of 667; and 528 of 192?
8. 1102 of 684; 2793 of 2660; and 256583 of 106499?
9. $2\frac{1}{2}$ of 14; 4 of $5\frac{1}{4}$; $2\frac{2}{7}$ of 8; $9\frac{1}{2}$ of 3; and $2\frac{1}{2}$ of $5\frac{1}{3}$?
10. $4\frac{2}{3}$ of $24\frac{1}{2}$; $18\frac{5}{8}$ of $3\frac{4}{7}$; $16\frac{3}{4}$ of $18\frac{3}{4}$; and $2\frac{1}{8}$ of $3\frac{1}{8}$?
11. $1\frac{1}{2}$ of $1\frac{1}{3}$; $3\frac{1}{2}$ of $4\frac{1}{3}$; $3\frac{1}{4}$ of $4\frac{1}{4}$; and $2\frac{1}{9}$ of $3\frac{1}{3}$?
12. $8\frac{3}{4}$ of $9\frac{3}{4}$; $1\frac{1}{4}$ of $7\frac{3}{5}$; $8\frac{1}{4}$ of $2\frac{1}{11}$; and $6\frac{1}{3}$ of $3\frac{1}{4}$?
13. $6\frac{1}{2}d.$ of 1*s.*; 3*s.* 6*d.* of £1; and 8*s.* 2*d.* of a guinea?
14. 3*s.* 4*d.* of 5*s.*; and 12*s.* $6\frac{1}{2}d.$ of £1.
15. $8\frac{1}{2}$ in. of a ft.; 3*s.* $3\frac{3}{4}d.$ of 5*s.*; and 3*s.* $8\frac{3}{4}d.$ of 1 guin.?
16. 6*s.* $4\frac{3}{4}d.$ of 13*s.* 5*d.*; $12\frac{1}{2}$ cwt. of a ton; and 1*s.* $11\frac{1}{2}d.$ of 4*s.* 10*d.*?
17. 2*s.* 3*d.* of 10*s.* 6*d.*; and 6 oz. 12 dwts. 16 grs. of a lb.?
18. 17*s.* $11\frac{1}{2}d.$: 19*s.* $10\frac{3}{4}d.$: and £1. 13*s.* $7\frac{1}{4}d.\frac{2}{7}$:—of £1.?
19. 14*s.* $8\frac{5}{6}d.$: 7*s.* 6*d.*: 7*s.* 3*d.*: and 1*s.* $5\frac{1}{2}d.$:—of £1.?
20. 2 cwt. 1 qr. 16 lbs.: 68 lbs.: and 1 qr. 13 lbs. $7\frac{1}{2}$ oz.:—of a ton?
21. 7 oz. 4 dwts.: and 6 oz. 2 dwts. $10\frac{1}{2}$ grs.:—of a lb.?
22. 4224 ft.: 5 yds. 2 ft.: and 6 fur. 16 pls.:—of a mile?
23. 3 fur. 17 pls. 2 ft. $4\frac{3}{7}$ in.: and 1 fur. 90 yds. 1 ft. $9\frac{3}{17}$ in.:—of a mile?
24. 5 hrs. 48 min. 48 sec.: and 12 hrs. 55 min. $23\frac{1}{15}$ sec.:—of a day?
25. 9 hrs. 36 min.: 3 min. $4\frac{4}{15}$ sec.: and $3\frac{1}{2}$ sec.:—of a day?
26. 1 pk. 1 gal.: 3 bush. 3 pks.: and 5 bush. 3 pks. 1 gal.:—of a qr.?

What fraction is:—

27. 1 qr. 4 lbs.: $2\frac{3}{7}$ qrs.: and 2 qrs. 16 lbs.:—of a cwt.?
28. 3 qrs. 2 lbs. 2 oz. 6 drs.: and 28 lbs. 12 oz. $6\frac{8\,8}{16\,8}$ drs.:—of a cwt.?
29. £40. 4*s*. $10\frac{2}{11}d.$, of £166; and £5. 12*s*. $4\frac{3}{4}d.\frac{2}{3\,5}$, of £187. 6*s*. 7*d*.?
30. 7 gals. $1\frac{3}{7}$ pts., of 54 gals.; and 220 gals. 2 qts., of 252 gals.?
31. 2 qrs. $3\frac{1}{5}$ nls., of an Eng. ell.; and 18*s*. $5\frac{1}{19}d.$, of a moidore?
32. 1 day 22 hrs. 40 min., of a week; and 2 wks. 5 dys. 18 hrs., of 365 days?
33. 3 dys. 17 hrs. 36 min., of 28 days; and 4620 yds., of a league?
34. 9*s*. $10\frac{1}{3}d.$, of 13*s*. $2\frac{1}{4}d.$; and 9 oz. $2\frac{5}{7}$ drs., of a lb.?
35. 1*s*., of 13*s*. 4*d*.; 11*s*. 3*d*., of 7*s*. $10\frac{1}{2}d.$; and $6\frac{3}{5}d.$, of 1*s*.?
36. £1. 1*s*. $2\frac{3}{4}d.\frac{3\,5}{7}$, of £2. 3*s*. 8*d*.; and 31 lbs. 1 oz. $12\frac{4}{9}$ drs., of a cwt.?
37. $\frac{3}{5}$, of 6*s*. 8*d*.; $\frac{4}{9}$, of 3*s*. 4*d*.; and $\frac{4}{5}$, of 2*s*. $4\frac{1}{2}d.$, of 2*s*. 6*d*.?
38. $\frac{5}{8}$, of a crown; $\frac{1}{8}$ of $\frac{6}{11}$, of 2*s*. 6*d*.; and $\frac{3}{7}$ of £1, of a guinea?
39. $\frac{3}{7}$ of 9*s*. $0\frac{3}{4}d.$ of 8*s*. $5\frac{1}{3}d.$; and 6*s*. $4\frac{4}{3\,1}d.$ of $\frac{5}{7}$ of £1. 6*s*. 8*d*.?
40. $\frac{3}{7}$, of 1*s*. $5\frac{1}{3}d.$; $\frac{1}{4}$, of 6*s*. 8*d*.; and $\frac{3}{5}$ of 4*d*., of 2*s*. 6*d*.?
41. $\frac{2}{3}$ of 1*d*.: $\frac{2}{5}$ of 1*s*.: $\frac{5}{8}$ of £1. 1*s*.: and $\frac{1\,6\,0}{1\,1}$ of $\frac{1}{4}d.$:—of £1.?
42. $\frac{5}{6}$ 1*d*.: $\frac{5}{6}$ of $\frac{1}{4}d.$: and $\frac{3}{4}$ of 10*s*. 6*d*.:—of £1.?
43. $\frac{1}{7}$ £1: $\frac{4}{5}$ £1: $\frac{3}{6\,4}$ £1: and $\frac{7}{1\,8}$ £1:—of 1*d*.?
44. $\frac{4}{7}$ guinea: $\frac{2}{5}$ of 1*s*.: and $\frac{1\,6}{1\,7}$ of $\frac{1}{4}d.$:—of £10.
45. $\frac{4}{7}$ oz.: $\frac{3}{5}$ dram: $\frac{5}{7}$ lb.: and $\frac{8}{9}$ oz.:—of a cwt.?
46. $\frac{2}{5}$ yard: $\frac{5}{1\,4\,0}$ yard: $\frac{5}{8}$ qr.: and $\frac{3}{5}$ nail:—of an Eng. ell?
47. $\frac{3}{5}$ min., of a day; $\frac{3}{8\,9\,3}$ cwt., of a lb.?
48. $\frac{1}{8\,4\,8}$ yard, of an inch; $\frac{4}{7}$ yd., of a mile?

ADDITION AND SUBTRACTION.

Find the sum of A and B, and the difference of C and D:—

	A.	B.	C.	D.
1.	$\frac{1}{2}$	$\frac{1}{3}$	$\frac{1}{3}$	$\frac{1}{21}$
2.	$\frac{1}{3}$	$\frac{1}{4}$	$\frac{3}{4}$	$\frac{5}{7}$
3.	$\frac{1}{4}$	$\frac{1}{5}$	$\frac{7}{15}$	$\frac{5}{6}$
4.	$\frac{1}{4}$	$\frac{2}{7}$	$\frac{3}{7}$	$\frac{5}{6}$
5.	$\frac{2}{3}$	$\frac{2}{7}$	$\frac{7}{9}$	$\frac{3}{7}$
6.	$\frac{2}{3}$	$\frac{4}{7}$	$\frac{2}{9}$	$\frac{5}{11}$
7.	$\frac{3}{7}$	$\frac{5}{9}$	$\frac{5}{6}$	$\frac{5}{15}$
8.	$\frac{1}{3}$	$\frac{7}{15}$	$\frac{3}{4}$	$\frac{6}{11}$
9.	$\frac{2}{9}$	$\frac{2}{7}$	$\frac{3}{5}$	$\frac{9}{10}$
10.	$\frac{5}{13}$	$\frac{7}{18}$	$\frac{28}{153}$	$\frac{3}{68}$
11.	$1\frac{1}{3}$	$7\frac{2}{5}$	$1\frac{5}{13}$	$3\frac{3}{4}$
12.	$2\frac{3}{7}$	$13\frac{7}{10}$	$16\frac{5}{6}$	$29\frac{5}{6}$
13.	$124\frac{3}{5}$	$51\frac{1}{6}$	$4\frac{2}{9}$	$12\frac{5}{13}$
14.	$9\frac{3}{4}$	$\frac{2}{5}$	$13\frac{2}{11}$	$19\frac{2}{7}$
15.	$58\frac{2}{5}$	$109\frac{6}{7}$	$8\frac{4}{25}$	$17\frac{6}{37}$
16.	$57\frac{2}{7}$	$54\frac{1}{6}$	$39\frac{1}{4}$	$115\frac{5}{6}$
17.	$12\frac{2}{3}$	$201\frac{7}{13}$	$1\frac{4}{7}$	$\frac{92}{161}$
18.	$376\frac{5}{8}$	$\frac{9}{10}$	169	$143\frac{3}{7}$
19.	$112\frac{5}{8}$	$117\frac{7}{13}$	$21\frac{5}{15}$	56
20.	$24\frac{5}{6}$	$48\frac{5}{16}$	$49\frac{2}{11}$	$63\frac{3}{8}$
21.	$\frac{11}{24}$	$\frac{15}{28}$	$\frac{3}{11}$	11
22.	$27\frac{5}{24}$	$15\frac{4}{15}$	$15\frac{4}{15}$	$\frac{23}{35}$
23.	$\frac{21}{43}$	$\frac{23}{30}$	119	$9\frac{2}{9}$
24.	$\frac{8}{69}$	$7\frac{23}{161}$	$384\frac{7}{39}$	1000
25.	$83\frac{7}{73}$	$38\frac{3}{130}$	$\frac{6}{107}$	$\frac{1057}{23564}$
26.	$\frac{179}{190}$	$\frac{41}{3000}$	$\frac{175}{10056}$	$\frac{6}{85}$
27.	$\frac{691}{992}$	$\frac{13}{337}$	$\frac{175}{264}$	$\frac{209}{313}$
28.	$\frac{779}{780}$	$\frac{9}{74820}$	$\frac{106}{153}$	$\frac{275}{644}$

Add together—

1. $\frac{1}{2}$, $\frac{3}{4}$, $\frac{5}{4}$, $\frac{3}{5}$, and $\frac{5}{6}$.
2. $387\frac{1}{2}$, $285\frac{3}{4}$, $394\frac{2}{3}$, and $1481\frac{1}{5}$.
3. $\frac{2}{5}$, $\frac{7}{10}$, $\frac{7}{30}$, $\frac{5}{140}$, and $\frac{5}{2800}$.
4. $2\frac{2}{3}$, $\frac{5}{6}$, $\frac{7}{8}$, $\frac{3}{4}$, $1\frac{1}{2}$, $\frac{7}{12}$, and 11.
5. $7\frac{1}{3}$, $12\frac{1}{8}$, $11\frac{1}{12}$, $8\frac{1}{30}$, $\frac{1}{30}$, $9\frac{1}{42}$, and $\frac{1}{56}$.
6. $\frac{1}{2}$, $\frac{1}{10}$, $\frac{2}{14}$, $\frac{3}{20}$, $\frac{1}{9}$, and $\frac{3}{35}$.
7. $8\frac{1}{2}$, $\frac{1}{6}$, $9\frac{1}{10}$, $11\frac{1}{15}$, $12\frac{1}{21}$, $\frac{1}{28}$, and $\frac{1}{30}$.
8. $4\frac{1}{3}$, $20\frac{1}{8}$, $11\frac{1}{15}$, $8\frac{1}{35}$, $7\frac{1}{24}$, $12\frac{1}{48}$, and $9\frac{1}{63}$.
9. $\frac{3}{5}$, $9\frac{1}{3}$, $\frac{1}{8}$, $8\frac{3}{35}$, $\frac{1}{16}$, $4\frac{1}{21}$, and 12.
10. $\frac{1}{2}$, $9\frac{1}{3}$, $6\frac{1}{9}$, $8\frac{1}{14}$, $\frac{1}{20}$, $12\frac{1}{27}$, and $\frac{1}{35}$.
11. $2\frac{1}{15}$, $8\frac{1}{15}$, $9\frac{2}{15}$, $7\frac{2}{3}$, and $8\frac{1}{3}$.
12. $4\frac{17}{28}$, $5\frac{16}{35}$, 9, $2\frac{1}{14}$, $17\frac{11}{42}$, and $\frac{11}{20}$.
13. $6\frac{1}{3}$, $5\frac{1}{4}$, $7\frac{7}{15}$, $11\frac{1}{3}$, $9\frac{2}{15}$, and $8\frac{11}{20}$.
14. $8\frac{5}{7}$, $11\frac{1}{9}$, $13\frac{2}{3}$, $14\frac{5}{14}$, $5\frac{1}{15}$, $8\frac{3}{35}$, and $\frac{1}{14}$.
15. $\frac{1}{27}$, $\frac{1}{30}$, $\frac{1}{16}$, $\frac{1}{44}$, $\frac{1}{33}$, and $\frac{1}{24}$.
16. $9\frac{1}{120}$, $\frac{5}{8}$, $9\frac{4}{9}$, $\frac{17}{18}$, $8\frac{7}{30}$, and $\frac{11}{20}$.
17. $\frac{1}{2}$, $6\frac{3}{4}$, $11\frac{11}{12}$, $9\frac{1}{15}$, $11\frac{1}{45}$, and $1\frac{1}{35}$.
18. $\frac{5}{10}$, $\frac{7}{40}$, $\frac{21}{180}$, $\frac{7}{81}$, $\frac{7}{27}$, and $\frac{21}{190}$.
19. $8\frac{1}{36}+\frac{1}{48}+9\frac{1}{35}+\frac{1}{66}+8\frac{1}{45}+9\frac{1}{108}$.
20. $\frac{3}{5}+\frac{2}{18}+\frac{3}{48}+\frac{3}{108}+\frac{7}{63}+\frac{1}{108}$.
21. $\frac{1}{2}-\frac{1}{3}+\frac{1}{4}-\frac{1}{5}+\frac{1}{6}$.
22. $3\frac{1}{3}-1\frac{2}{5}+\frac{1}{6}-2\frac{2}{15}+\frac{1}{9}$.
23. $1\frac{1}{2}-1+6\frac{2}{3}-4\frac{4}{9}+\frac{5}{27}-2\frac{16}{81}$.
24. $1\frac{4}{17}+1\frac{7}{30}-3\frac{11}{90}+1\frac{21}{850}$.
25. $\frac{1}{2}-6\frac{5}{6}+\frac{3}{4}-6\frac{13}{14}+4\frac{7}{10}+8\frac{11}{20}$.
26. $\frac{1}{2}-\frac{1}{10}+\frac{1}{6}-\frac{1}{60}+\frac{1}{12}-\frac{1}{20}$.
27. $\frac{1}{2}-\frac{1}{3}+\frac{1}{6}-\frac{1}{12}+\frac{1}{12}-\frac{1}{35}$.
28. $5\frac{1}{2}-\frac{1}{3}+\frac{1}{4}-\frac{1}{12}+\frac{1}{20}-2\frac{1}{35}-3\frac{1}{63}$.
29. $\frac{1}{4}-\frac{1}{9}+\frac{1}{10}+\frac{1}{24}-\frac{1}{18}+\frac{1}{72}-\frac{1}{48}$.
30. $\frac{11}{12}-\frac{1}{48}+\frac{1}{6}-\frac{1}{12}+\frac{4}{5}-\frac{3}{7}-\frac{5}{10}-\frac{2}{42}$.

MULTIPLICATION AND DIVISION.

Find the product of A and B, and the quotient of C divided by D :—

	A.	B.	C.	D.
1.	$\frac{5}{18}$	3	3565	7
2.	$\frac{7}{15}$	5	1570	8
3.	$\frac{11}{13}$	8	3213	10
4.	$\frac{13}{30}$	12	5674	12
5.	$\frac{5}{24}$	8	4593	67
6.	$\frac{11}{24}$	12	32008	92
7.	$\frac{7}{25}$	10	9267	39
8.	$\frac{13}{24}$	8	17051	136
9.	$\frac{2}{75}$	12	13524	391
10.	$\frac{25}{289}$	7	6327	399
11.	$\frac{14}{195}$	12	$\frac{12}{15}$	4
12.	$\frac{7}{16}$	10	$\frac{12}{15}$	3
13.	$\frac{42}{49}$	14	$\frac{18}{49}$	9
14.	$\frac{11}{288}$	18	$\frac{39}{57}$	8
15.	$\frac{23}{744}$	21	$\frac{24}{46}$	10
16.	$\frac{10}{13}$	71	$\frac{8}{15}$	12
17.	$\frac{11}{13}$	97	$\frac{33}{35}$	12
18.	$\frac{5}{288}$	36	$\frac{56}{61}$	12
19.	$\frac{8}{217}$	47	$\frac{33}{42}$	18
20.	$\frac{17}{667}$	23	$\frac{161}{248}$	21
21.	$3\frac{1}{2}$	7	$3\frac{1}{2}$	7
22.	$5\frac{4}{9}$	6	$4\frac{3}{8}$	10
23.	$4\frac{2}{5}$	10	$12\frac{1}{7}$	14
24.	$11\frac{7}{10}$	9	$12\frac{1}{2}$	3
25.	$21\frac{7}{8}$	12	$28\frac{1}{3}$	8
26.	$15\frac{4}{5}$	16	$53\frac{1}{7}$	10

	A.	B.	C.	D.
27.	$27\frac{5}{13}$	18	$148\frac{1}{3}$	7
28.	$25\frac{7}{15}$	14	$567\frac{12}{25}$	9
29.	$32\frac{8}{15}$	21	$423\frac{6}{7}$	12
30.	$16\frac{12}{30}$	26	$387\frac{27}{35}$	18
31.	118	$\frac{2}{3}$	118	$\frac{2}{3}$
32.	258	$\frac{3}{4}$	584	$\frac{3}{4}$
33.	250	$\frac{5}{6}$	249	$\frac{6}{7}$
34.	654	$\frac{5}{9}$	108	$\frac{5}{13}$
35.	146	$\frac{15}{25}$	54	$\frac{150}{275}$
36.	325	$7\frac{2}{3}$	156	$7\frac{1}{3}$
37.	107	$6\frac{5}{6}$	565	$8\frac{3}{4}$
38.	252	$8\frac{7}{13}$	513	$16\frac{5}{9}$
39.	291	$9\frac{11}{15}$	4215	$19\frac{7}{13}$
40.	292	$14\frac{15}{38}$	7569	$21\frac{6}{7}$
41.	$\frac{14}{15}$	$\frac{9}{10}$	$\frac{21}{25}$	$\frac{14}{15}$
42.	$\frac{23}{35}$	$\frac{25}{35}$	$\frac{23}{35}$	$\frac{23}{35}$
43.	$\frac{16}{21}$	$\frac{25}{34}$	$\frac{3}{10}$	$\frac{7}{100}$
44.	$\frac{3}{10}$	$\frac{77}{100}$	$\frac{9}{100}$	$\frac{7}{10}$
45.	$\frac{10}{399}$	$\frac{759}{1000}$	$\frac{33}{100}$	$\frac{27}{1000}$
46.	$\frac{512}{1071}$	$\frac{7}{250}$	$\frac{64}{729}$	$\frac{8}{27}$
47.	$\frac{292}{675}$	$\frac{45}{48}$	$\frac{73}{1000}$	$\frac{37}{100}$
48.	$\frac{418}{836}$	$\frac{7}{189}$	$\frac{231}{1000}$	$\frac{3}{10}$
49.	$\frac{11}{13}$	$\frac{461}{601}$	$\frac{231}{1000}$	$\frac{3}{10000}$
50.	$\frac{9126}{13447}$	$\frac{113}{353}$	$\frac{10600}{19881}$	$\frac{140}{141}$
51.	$14\frac{3}{7}$	$\frac{5}{6}$	97	$54\frac{4}{7}$
52.	$85\frac{5}{6}$	$\frac{3}{4}$	$56\frac{5}{9}$	$\frac{3}{5}$
53.	$20\frac{20}{39}$	$4\frac{7}{8}$	$2\frac{1}{30}$	$4\frac{5}{14}$
54.	$2\frac{47}{513}$	$36\frac{4}{7}$	$10\frac{1}{2}$	$\frac{3}{4}$
55.	$17\frac{16}{30}$	$5\frac{4}{7}$	$2\frac{1}{3}$	$3\frac{3}{5}$
56.	$33\frac{2}{11}$	$24\frac{73}{474}$	$69\frac{2}{11}$	$77\frac{3}{11}$
57.	$21\frac{46}{1198}$	$29\frac{1}{8}$	$17\frac{52}{251}$	$5\frac{8}{35}$

Find the continued product of—

1. $\frac{2}{3}$, $\frac{3}{4}$, $\frac{9}{11}$, and $\frac{11}{13}$.
2. $\frac{5}{6}$, $\frac{3}{8}$, $\frac{6}{7}$, and 9.
3. $\frac{9}{10}$, $\frac{15}{27}$, $\frac{16}{24}$, and $\frac{17}{64}$.
4. $\frac{16}{81}$, $\frac{9}{96}$, $\frac{15}{60}$, $\frac{54}{80}$, and $\frac{4}{9}$.
5. $\frac{8}{15}$, $\frac{7}{16}$, $\frac{5}{84}$, $\frac{11}{10}$, and $\frac{36}{33}$.
6. $\frac{5}{12}$, $\frac{24}{35}$, $2\frac{1}{2}$, $\frac{5}{6}$, and $1\frac{1}{2}$.
7. $\frac{2}{9}$, 4, $\frac{5}{7}$, $\frac{3}{4}$, and $\frac{14}{30}$.
8. $\frac{8}{9}$, $\frac{5}{16}$, $\frac{3}{14}$, $\frac{7}{12}$, and $1\frac{4}{5}$.
9. $13\frac{5}{9}$, $7\frac{1}{3}$, $\frac{3}{4}$, $\frac{4}{9}$, and $12\frac{1}{2}$.
10. $14\frac{7}{8}$, $2\frac{1}{2}$, $\frac{1}{3}$, and $4\frac{1}{7}$.
11. 14, $\frac{5}{6}$, $\frac{4}{5}$, 9, and $6\frac{3}{7}$.
12. $\frac{4}{3}$, 5, $\frac{2}{7}$, $\frac{3}{8}$, and $4\frac{1}{6}$.
13. $\frac{13}{14}$, $1\frac{1}{13}$, $\frac{7}{12}$, $1\frac{5}{12}$, and 3.
14. $\frac{9}{10}$, $1\frac{1}{3}$, $\frac{30}{27}$, $\frac{4}{5}$, and $1\frac{1}{4}$.
15. $4\frac{3}{7}$, $6\frac{4}{9}$, $17\frac{1}{2}$, and $10\frac{3}{5}$.
16. $\frac{5}{4}$, $\frac{3}{7}$, $\frac{8}{4}$, $18\frac{7}{12}$, and $\frac{4}{5}$.
17. $1\frac{11}{24}$, $4\frac{7}{8}$, $\frac{16}{81}$, and $20\frac{20}{39}$.
18. $\frac{3}{4}$, $\frac{6}{9}$, $\frac{3}{12}$, $\frac{15}{21}$, $\frac{27}{54}$, and $\frac{16}{60}$.
19. $\frac{16}{81}$, $\frac{9}{96}$, $\frac{16}{60}$, $\frac{54}{80}$, and $\frac{4}{9}$.
20. $\frac{8}{15}$, $2\frac{3}{8}$, $1\frac{1}{28}$, and $1\frac{11}{64}$.
21. $\frac{6}{13}$, $\frac{4}{9}$, $\frac{3}{8}$, $\frac{26}{27}$, $\frac{7}{11}$, and $\frac{22}{14}$.
22. $\frac{10}{28}$, $\frac{11}{30}$, $\frac{85}{18}$, $\frac{72}{25}$, $\frac{15}{20}$, $\frac{140}{22}$, $\frac{5}{38}$, and $\frac{4}{17}$.
23. $\frac{16}{88}$, $\frac{11}{80}$, $\frac{9}{84}$, $\frac{13}{18}$, $\frac{5}{13}$, $\frac{6}{23}$, $\frac{7}{8}$, and $\frac{17}{27}$.
24. $\frac{7}{18}$, $\frac{10}{33}$, $\frac{13}{14}$, $\frac{9}{34}$, $\frac{11}{30}$, $\frac{7}{18}$, $\frac{16}{36}$, and $\frac{17}{45}$.
25. $\frac{13}{17}$, $\frac{50}{22}$, $\frac{7}{18}$, $\frac{8}{4}$, $\frac{9}{25}$, $\frac{17}{18}$, $\frac{11}{30}$, and $\frac{19}{28}$.
26. $\frac{1}{2}$, $\frac{3}{4}$, $\frac{7}{12}$, $\frac{9}{10}$, $\frac{14}{6}$, $\frac{10}{24}$, $\frac{3}{4}$, $\frac{4}{9}$, and $\frac{1}{2}$.
27. $\frac{12}{13}$, $2\frac{2}{3}$, $1\frac{1}{25}$, $11\frac{11}{64}$, $\frac{49}{133}$, $1\frac{1}{78}$, and $\frac{28}{98}$.
28. $\frac{3}{8}$, $\frac{40}{63}$, $\frac{17}{54}$, $\frac{11}{30}$, $\frac{14}{25}$, $\frac{63}{64}$, $\frac{12}{36}$, and $\frac{27}{14}$.
29. $\frac{49}{64}$, $\frac{20}{56}$, $\frac{10}{21}$, $\frac{138}{133}$, $\frac{102}{181}$, $\frac{63}{60}$, and $\frac{232}{361}$.
30. $\frac{324}{361}$, $\frac{441}{529}$, $\frac{1444}{1296}$, and $\frac{2116}{1764}$.

COMPLEX FRACTIONS.

Reduce to their simplest forms:—

1. $\frac{\frac{2}{3}}{\frac{3}{4}}$, $\frac{\frac{3}{7}}{\frac{7}{10}}$, $\frac{\frac{9}{11}}{\frac{9}{13}}$, $\frac{\frac{1}{17}}{\frac{3}{34}}$, $\frac{\frac{5}{6}}{\frac{5}{8}}$.
2. $\frac{2\frac{1}{2}}{3\frac{1}{3}}$, $\frac{4\frac{1}{2}}{3\frac{1}{4}}$, $\frac{4\frac{1}{4}}{3\frac{1}{11}}$, $\frac{8\frac{1}{4}}{4\frac{2}{3}}$, $\frac{6\frac{1}{3}}{2\frac{1}{9}}$.
3. $\frac{8}{6\frac{2}{5}}$, $\frac{5\frac{1}{4}}{28}$, $\frac{19}{4\frac{3}{4}}$, $\frac{2\frac{1}{13}}{9\frac{1}{6}}$, $\frac{8}{9\frac{1}{7}}$.
4. $\frac{12\frac{1}{2}}{6\frac{1}{4}}$, $\frac{17\frac{1}{2}}{10\frac{3}{4}}$, $\frac{10\frac{1}{11}}{9\frac{1}{4}}$, $\frac{55}{6\frac{5}{13}}$.
5. $\frac{\frac{2}{3}}{\frac{4}{7}}$ of $\frac{\frac{2}{4}}{\frac{6}{7}}$, $\frac{8}{\frac{1}{3}}$ of $\frac{\frac{2}{3}}{12}$, $\frac{1\frac{5}{16}}{\frac{1}{13}}$ of $\frac{\frac{22}{24}}{5\frac{3}{4}}$.
6. $\frac{4\frac{1}{3}}{8\frac{1}{6}}$ of $\frac{4\frac{2}{3}}{2\frac{1}{6}}$, $\frac{9}{4\frac{1}{7}}$ of $\frac{5\frac{1}{4}}{18}$, $\frac{60}{3\frac{1}{3}} \div \frac{4\frac{2}{7}}{\frac{1}{9}}$.
7. $\frac{2\frac{2}{3}}{18\frac{1}{7}}$ of $\frac{10\frac{1}{9}}{2\frac{1}{4}}$, $\frac{16\frac{1}{2}}{15\frac{3}{8}} \div \frac{10\frac{1}{2}}{9\frac{3}{4}}$, $\frac{11\frac{9}{10}}{17\frac{1}{2}} \div \frac{11\frac{1}{2}}{6\frac{1}{7}}$.
8. $7\frac{1}{3}$ of $2\frac{1}{2} \div 6\frac{2}{5}$; $2\frac{1}{7}$ of $3\frac{1}{11} - 2\frac{1}{17}$.
9. $4\frac{1}{3}$ of $2\frac{1}{2} + 8\frac{3}{11}$; $2\frac{1}{2}$ of $5\frac{1}{4} \times 1\frac{1}{14}$.
10. $3\frac{3}{4}$ of $2\frac{3}{5} - 1\frac{1}{4}$ of $\frac{8}{13}$; $7\frac{1}{7}$ of $3\frac{1}{10} + 6\frac{2}{3}$ of $\frac{1}{7}$.
11. $9 - 8\frac{3}{5} \times \frac{6}{11} \div 2\frac{2}{3}$; $4\frac{4}{7}$ of $8\frac{1}{3} \div 5\frac{1}{3}$ of $\frac{1}{13}$.
12. $2\frac{1}{3} + 3\frac{1}{4} - 4\frac{1}{2}$ of $\frac{1}{17}$; $6\frac{2}{3}$ of $2\frac{1}{8} \times 4\frac{1}{7}$ of $1\frac{2}{7}$.
13. $\frac{3}{5}$ of $\frac{5}{4}$ of $\frac{5}{6} \times (8\frac{1}{3} + 4\frac{1}{3})$; $\frac{1}{3}$ of $\frac{1}{4}$ of $\frac{1}{6} - \frac{1}{8}$ of $\frac{1}{9}$ of $\frac{3}{4}$.
14. $\frac{1}{10}$ of $\frac{1}{16} + \frac{1}{18}$ of $\frac{1}{10}$; $\frac{1}{10}$ of $\frac{1}{18} \div \frac{1}{13}$ of $\frac{1}{17}$.
15. $\frac{2\frac{1}{3} \text{ of } 4\frac{1}{2}}{6\frac{3}{4} \text{ of } 1\frac{3}{5}} \times \frac{4\frac{2}{3} \text{ of } 3\frac{3}{4}}{12\frac{1}{4} \text{ of } 1\frac{1}{7}}$; $\frac{7\frac{1}{3} \text{ of } 4\frac{1}{2}}{4\frac{2}{5} \text{ of } 1\frac{1}{3}} \div \frac{1\frac{1}{3} \text{ of } 10\frac{1}{2}}{6\frac{3}{5} \text{ of } \frac{1}{9}}$.
16. $\frac{4\frac{1}{3} \text{ of } 2\frac{1}{6}}{8\frac{3}{4} \text{ of } 7\frac{1}{3}} + \frac{\frac{1}{2} \text{ of } \frac{1}{5}}{\frac{3}{4} \text{ of } \frac{8}{9}}$; $\frac{11 \text{ of } \frac{1}{7}}{8 \text{ of } \frac{3}{5}} - \frac{3\frac{1}{3} \text{ of } \frac{1}{10}}{2\frac{1}{3} \text{ of } 3\frac{3}{7}}$.
17. $\frac{4\frac{2}{3} \text{ of } \frac{1}{7}}{3\frac{3}{4} \text{ of } \frac{1}{11}}$ of $\frac{2\frac{1}{3} \text{ of } 4\frac{1}{2}}{\frac{1}{7} \text{ of } 2\frac{1}{2}}$; $\frac{6\frac{2}{3} \text{ of } 2\frac{1}{14}}{4\frac{1}{7} \text{ of } 3\frac{1}{7}} + \frac{2\frac{1}{2} \text{ of } 3\frac{2}{5}}{1\frac{1}{10} \text{ of } 4\frac{1}{3}}$.
18. $\frac{\frac{1}{2} \text{ of } \frac{1}{7}}{\frac{4}{5} \text{ of } \frac{4}{13}} - \frac{\frac{1}{13} \text{ of } \frac{1}{9}}{\frac{1}{13} \text{ of } \frac{3}{10}}$; $\frac{3\frac{1}{3} \text{ of } 2\frac{2}{9}}{1\frac{2}{5} \text{ of } 3\frac{1}{3}} \div \frac{2\frac{2}{7} \text{ of } 3\frac{1}{2}}{4\frac{2}{3} \text{ of } 1\frac{1}{11}}$.

MISCELLANEOUS EXAMPLES AND EXERCISES.

1. Find the prime numbers that will divide 1000 without remainder.
2. Three numbers are prime to one another. Two of them are 6 and 12; and the third is greater than 53, and less than 59: what is it?
3. What is the nearest whole number to $18\frac{3}{7}$?
4. What is the nearest whole number to $21\frac{5}{8}$?
5. What is the nearest whole number to $42\frac{1}{2}\frac{5}{8}$?
6. What is the nearest whole number to $27\frac{1}{4}\frac{8}{5}$?
7. What is the nearest whole number to $53\frac{2}{4}\frac{1}{0}$?
8. How many eighteens are there in 120?
9. How many forty-fives are there in 333?
10. How many thirty-nines are there in 687?
11. How often will a wheel, 8 feet in circumference, turn in 150 yards?
12. How often will a wheel, 6 feet in circumference, turn in 179 yards?
13. How many revolutions will a wheel, 6 feet in circumference, make in 179 yds. 1 ft.?
14. How many revolutions will a wheel, $4\frac{1}{2}$ feet in circumference, make in a mile?
15. How many revolutions will a wheel, 4 ft. 9 in. in circumference, make in $3\frac{1}{2}$ miles?
16. 100 apples were divided among A, B, and C. A had $\frac{1}{2}\frac{4}{5}$ of them, B had $\frac{7}{2}\frac{}{0}$ of them, and C the rest: how many had each?
17. 100 apples were divided between A and B. A had 45, and B the rest: what part had B?
18. 100 apples were divided between A and B. A had $\frac{2}{5}$, and B $\frac{3}{4}$ of the remainder: how many had each?

19. 100 apples were divided between A and B. A had $\frac{17}{20}$ of them, and B the rest: how many had each?
20. If 100 apples be divided equally among 12 boys, how many will each have?
21. How many apples must be divided among 10 boys, so that each may have $2\frac{3}{4}$?
22. If a third of a mile be divided into 65 equal parts, how many such parts will make a mile?
23. If an eighth of a mile be divided into 87 parts, how many such parts make a mile and a half?
24. If a ninth of a mile be divided into 27 parts, how many such parts make a mile and a half?
25. Into how many equal parts must 60 be divided, so that 10 of them may be 25?
26. Into how many equal parts must a mile be divided, so that 50 such parts may be a mile and a half?
27. How many yards are there in one of these parts?
28. How often can $\frac{1}{3}$ be taken from $8\frac{1}{3}$, and $\frac{3}{4}$ from $15\frac{3}{4}$?
29. How often can 18 be taken from 63?
30. How many 21ths are equal to one-half?
31. Which is the greatest, $\frac{2}{3}$, $\frac{5}{8}$, or $\frac{7}{10}$?
32. Which is the greatest, $\frac{4}{5}$, $\frac{7}{9}$, or $\frac{9}{11}$?
33. Which is the greatest, $\frac{5}{8}$, $\frac{4}{9}$, $\frac{8}{13}$, or $\frac{7}{20}$?
34. Add together $2\frac{3}{4}$ of $1\frac{5}{12}$ of $\frac{3}{7}$, and $1\frac{1}{7}$ of $1\frac{3}{5}$ of $\frac{7}{8}$.
35. Add together $3\frac{4}{5}$ of $1\frac{1}{10}$ of $1\frac{1}{4}$, and $1\frac{1}{5}$ of $1\frac{1}{10}$ of $2\frac{5}{11}$.
36. Add together $3\frac{1}{4}$ of $1\frac{2}{13}$ of $1\frac{1}{15}$, and $1\frac{1}{3}$ of $2\frac{2}{3}$ of $1\frac{1}{4}$.
37. Multiply the square of $1\frac{7}{10}$ by $2\frac{1}{17}$.
38. Multiply the square of $1\frac{1}{5}$ by the cube of $2\frac{1}{4}$.
39. Reduce $\frac{1\frac{3}{4}+2\frac{5}{6}}{5\frac{1}{2}+4\frac{1}{3}}$, $\frac{4\frac{1}{7}-2\frac{1}{4}}{6\frac{1}{2}-2\frac{1}{7}}$, and $\frac{2\frac{1}{4}-1\frac{1}{3}}{2\frac{1}{6}+1\frac{1}{4}}$, to simple fractions.
40. Reduce $\frac{1-\frac{1}{2}+\frac{1}{3}-\frac{1}{4}}{1+\frac{1}{2}-\frac{1}{3}-\frac{1}{4}}$, and $\frac{3}{5}$ of $\frac{\frac{1}{4}-\frac{1}{9}}{\frac{1}{3}+\frac{1}{5}}$ + $\frac{1}{15}$ of $\frac{\frac{2}{3}+\frac{3}{2}}{1+\frac{1}{9}}$, to simple fractions.

41. Add together $\frac{5}{6}$, $2\frac{3}{4}$, $\frac{1\frac{1}{2}}{4}$, and $\frac{1\frac{3}{4}}{3\frac{1}{2}}$.

42. Multiply $19\frac{5}{7}$ by $\frac{4}{5}$ of $\frac{2\frac{1}{2}}{5\frac{3}{4}}$.

43. Find the continued product of $\frac{4}{5\frac{1}{3}}$, $14\frac{1}{7}$, $\frac{2\frac{3}{4}}{4}$, $\frac{8}{7}$, $\frac{5}{7\frac{1}{3}}$, $\frac{1\frac{1}{3}}{2\frac{5}{4}}$, $\frac{3}{4}$, and 21.

44. Add together the sum, difference, and product of $3\frac{7}{8}$ and $2\frac{1}{3}$?

45. Reduce 9 days 15 hours to the fraction of 28 days.

46. Reduce $\frac{7}{48}$ and $\frac{1}{40}$ of a guinea, to fractions of a crown?

47. Reduce 17 weeks 5 days 18 hours to the fraction of a year.

48. Which is the greatest, $\frac{1}{16}$ of a pound, $\frac{1}{24}$ of a guinea, or $\frac{1}{25}$ of a moidore?

49. Which is the greatest, $\frac{1}{21}$ of a pound, $\frac{1}{23}$ of a guinea, or $\frac{1}{4}$ of 3*s*. $9\frac{1}{2}$*d*.?

50. Which is the greatest, $\frac{1}{19}$ of a pound, $\frac{1}{20}$ of a guinea, or $\frac{8}{35}$ of a crown?

51. What is the difference between $\frac{3}{7}$ of half a guinea, and $\frac{1}{8}$ of a crown?

52. Add together $\frac{5}{9}$ of a guinea, $\frac{3}{10}$ of a pound, $\frac{7}{10}$ of a crown, and $\frac{5}{8}$ of a shilling.

53. Take $\frac{7}{15}$ of a pound from $\frac{1}{14}$ of a guinea, and reduce the result to the fraction of a moidore.

54. Add together $\frac{3}{10}$ of a shilling, $\frac{7}{8}$ of a crown, $\frac{9}{10}$ of a £, and $\frac{4}{9}$ of a guinea.

55. Add together $\frac{3}{7}$ of 6*s*. 8*d*., $\frac{5}{7}$ of £2. 3*s*. 9*d*., and $\frac{9}{11}$ of £4. 14*s*. 5*d*.

56. Find the difference between $\frac{7}{9}$ of £1., and $\frac{2}{5}$ of a guinea, and reduce it to the fraction of half a guinea.

57. Add together $\frac{4}{7}$ cwt., $8\frac{5}{6}$ lbs., $3\frac{9}{10}$ oz., and $\frac{9}{560}$ ton.

58. From $\frac{3}{7}$ of an oz. take $\frac{4}{5}$ of a dwt.

59. Add together $3\frac{1}{3}$ English ells, $4\frac{1}{3}$ yards, and $\frac{5}{7}$ nail.

60. Add together $4\frac{9}{10}$ miles, $\frac{3}{7}$ furlong, and $\frac{4}{7}$ of $1\frac{1}{3}$ yards.
61. Add together $\frac{11}{14}$ guinea, $\frac{5}{12}$ crown, $\frac{7}{10}$ £, $\frac{5}{16}$ shilling, $\frac{5}{6}$ of 7*s.* 6*d.*, and $\frac{3}{20}$ of 10*s.* 6*d.*
62. Of $5\frac{3}{5}$ and $9\frac{3}{4}$, which is the nearer to $7\frac{3}{4}$?
63. Of $2\frac{3}{4}$ and $8\frac{3}{5}$, which is the nearer to $5\frac{5}{7}$?
64. Of $4\frac{3}{5}$ and $11\frac{5}{9}$, which is the nearer to $7\frac{3}{4}$?
65. Of $5\frac{3}{5}$ and $7\frac{5}{8}$, which is the nearer to $6\frac{3}{8}$?
66. Of $\frac{1}{2}d.$ and $\frac{5}{4}d.$, which is the nearer to $\frac{1}{1}\frac{3}{0}d.$?
67. Of $5\frac{3}{4}$, $9\frac{3}{4}$, and $5\frac{4}{5}$, which is the nearest to $7\frac{3}{4}$?
68. What numbers are they of which 8 is $\frac{2}{3}$, 14 is $\frac{7}{8}$, 15 is $\frac{5}{6}$?
69. What numbers are they of which 15 is $\frac{2}{5}$, and 15 is $\frac{4}{7}$?
70. What numbers are they of which 18 is $\frac{7}{6}$, $\frac{2}{3}$ is $\frac{3}{4}$, and $2\frac{1}{3}$ is $\frac{7}{8}$?
71. Of what sum is $7\frac{1}{2}d.$ two-thirds?
72. Of what distance is $1\frac{1}{2}$ miles $\frac{5}{8}$, and $4\frac{1}{2}$ miles is $\frac{7}{10}$?
73. If $\frac{3}{5}$ of an estate be worth £220, what is the value of $\frac{3}{11}$?
74. If $\frac{2}{7}$ of an estate be worth £300, what is the value of $\frac{11}{14}$?
75. If $\frac{5}{9}$ of a ship be worth £1300, what is the value of $\frac{7}{16}$?
76. If the coach-fare for 171 miles be 30*s.*, at what rate is that per mile?
77. What is the price of a yard of cloth, when $26\frac{3}{4}$ yards cost £4. 8*s.* $6\frac{1}{2}d.$?
78. What is the price of a yard of cloth, when $62\frac{7}{8}$ yards cost £1501. 13*s.* 4*d.*?
79. If $15\frac{2}{5}$ hogsheads of sugar weigh 286 cwt. 3 qrs. $8\frac{3}{5}$ lbs., what does a hogshead weigh?
80. If $3\frac{9}{16}$ lbs. of tea cost 17*s.* $9\frac{3}{4}d.$, what is the value of $17\frac{3}{16}$ lbs.?
81. If $\frac{7}{8}$ of a lb. cost $2\frac{3}{16}s.$, what will $\frac{5}{14}$ of a cwt. cost?
82. If $17\frac{3}{8}$ English ells cost £2. 4*s.*, what cost $34\frac{3}{8}$ yards?
83. If $\frac{2}{3}$ of a shilling buy $\frac{1}{4}$ of a gallon, how many gallons will $\frac{3}{5}$ of a shilling buy?
84. If $\frac{3}{17}$ £ is paid for $\frac{2}{15}$ of a yard, what cost $3\frac{1}{4}$ yards?
85. If £$2\frac{1}{2}$ buy $3\frac{1}{3}$ gallons, how many will £$4\frac{1}{7}$ buy?

86. If $3\frac{1}{5}$ acres let for £$10\frac{1}{4}$, how many are let for £$3\frac{3}{16}$?
87. How many yards of silk, at 4*s.* 6*d.* a yard, are worth 75 lbs. of tea at 5*s.* 6*d.* per lb.?
88. How many dozens of wine, at 35*s.* a dozen, are worth 134 yards of cloth at 11*s.* 6*d.* a yard?
89. How many pears, at 4*d.* a dozen, are worth 150 apples at 8*d.* a score?
90. A was born $34\frac{1}{2}$ years after B: how old is B when A is $17\frac{3}{4}$?—and how old is A when B is $70\frac{1}{8}$ years of age?
91. In 1859 A was $13\frac{1}{8}$ years younger than B, and $17\frac{1}{4}$ years older than C, who was $21\frac{1}{2}$ in 1819: how old are A, B, and C in 1861?
92. In what time will a person accomplish a journey of $42\frac{1}{2}$ miles, at $3\frac{3}{4}$ miles per hour?
93. If a person walk 5 miles the first hour, $4\frac{3}{4}$ the second hour, $4\frac{1}{2}$ the third, and so on during 10 hours,—how many miles will he travel in all? What is the greatest distance he can go? and in what time?
94. If a man walk $47\frac{1}{4}$ miles in 2 days, in how many days will he walk 134 miles?
95. How many $\frac{1}{10}$ of a pound are there in 7 oz. 4 dwts.
96. How many $\frac{1}{100}$ of a pound are there in $\frac{3}{4}$ of a guinea.
97. From 100 acres $\frac{2}{5}$ are taken; 50 acres are added to the result, and $\frac{5}{7}$ of the whole are taken: how many acres does this produce?
98. If 5 oz. of silk can be spun into a thread $2\frac{1}{2}$ furlongs long, what weight of silk would supply a thread sufficient to reach to the moon, 240,000 miles?
99. If A can dig a field in 2 days, and B in 3, in what time can A and B together dig it?
100. If A can do a piece of work in 6 days, and B in 8, in what time can A and B together do it?
101. If A can do a piece of work in 9 days, and B in 15, in what time can A and B together do it?

102. If A can do a piece of work in 10 days, and B in 12, in what time can A and B together do it?

103. A cistern is filled by one pipe in 3 hours, and by another in 4 hours: in what time will both fill it?

104. If A can do a piece of work in 8 days, B in 10, and C in 12, in what time can A, B, and C do it?

105. A cistern is filled by three pipes in 2, 4, and 8 hours respectively: in what time will all together fill it?

106. A cistern is filled by three pipes in 2, 3, and 4 hours respectively: in what time will they all fill it?

107. If A can do a piece of work in $7\frac{1}{2}$ days, and B in $8\frac{1}{3}$, in what time can both together do it?

108. If A can do a piece of work in $7\frac{1}{2}$ days, and B in $17\frac{1}{2}$, in what time can both together do it?

109. A cistern is filled by three pipes in 4, $8\frac{4}{7}$, and 15 hours respectively: in what time will they all fill it?

110. If A can reap $\frac{2}{3}$ of a field in 4 days, and B $\frac{2}{5}$ in 3 days, in what time can A and B reap the field?

111. If A can reap an acre in $2\frac{1}{2}$ days, B 2 acres in $3\frac{1}{2}$ days, and C 4 acres in $5\frac{1}{2}$ days, in what time can A, B, and C together reap 12 acres?

112. A cistern can be filled by 2 pipes in 25 minutes and 35 minutes respectively, and emptied by another in 20 minutes: in what time would the cistern be filled if the 3 pipes were all open together?

113. If A can do a piece of work in 10 days, and A and B can do it in 7, in what time can B do it alone?

114. If A can do a piece of work in 12 days, and A and B can do it in 8, in what time can B alone do it?

115. If A, B, and C together can do a piece of work in 5 days, A and B in 8, and B and C in 9, in what time can each of them do it alone?

PRACTICE.

			s.	d.
1.	4608	at	0	$3\frac{1}{2}$
2.	4608	at	0	$6\frac{1}{2}$
3.	$358\frac{3}{4}$	at	0	5
4.	7896	at	0	$5\frac{1}{2}$
5.	3684	at	0	$1\frac{1}{4}$
6.	$457\frac{1}{2}$	at	0	7
7.	5963	at	0	$1\frac{3}{4}$
8.	6786	at	0	$2\frac{1}{4}$
9.	$831\frac{11}{12}$	at	0	10
10.	4388	at	0	$2\frac{1}{2}$
11.	8653	at	0	$2\frac{3}{4}$
12.	$585\frac{5}{16}$	at	0	11
13.	8543	at	0	$3\frac{3}{4}$
14.	2758	at	0	$4\frac{1}{4}$
15.	$8175\frac{1}{2}$	at	0	$3\frac{3}{4}$
16.	5623	at	0	$4\frac{1}{2}$
17.	4278	at	0	$5\frac{3}{4}$
18.	$675\frac{1}{2}$	at	0	$4\frac{3}{4}$
19.	6496	at	0	$6\frac{1}{2}$
20.	4378	at	0	$6\frac{3}{4}$
21.	$1412\frac{2}{3}$	at	0	$3\frac{1}{4}$
22.	4021	at	0	$7\frac{1}{2}$
23.	8642	at	0	$8\frac{1}{4}$
24.	$387\frac{1}{7}$	at	0	8
25.	7643	at	0	$8\frac{3}{4}$
26.	8765	at	0	9
27.	$2011\frac{5}{8}$	at	0	$10\frac{1}{2}$

			s.	d.
28.	3968	at	0	10¼
29.	4076	at	0	10½
30.	7864¾	at	0	2¾
31.	9836	at	0	11¾
32.	548	at	0	11½
33.	1565⅝	at	0	11¼
34.	6538	at	0	11
35.	8429	at	0	10¾
36.	435⅔	at	0	10½
37.	7463	at	0	10¼
38.	4291	at	0	10
39.	1204⅜	at	0	9¾
40.	5408	at	0	9½
41.	2837	at	0	9¼
42.	6974⅚	at	0	9
43.	3218	at	0	8¾
44.	2766	at	0	8½
45.	1970¼	at	0	8¼
46.	3482	at	0	7¾
47.	1857	at	0	7½
48.	499⅛	at	0	7¼
49.	7543	at	0	7
50.	4928	at	9	6¾
51.	2537⅛	at	0	6½
52.	8638	at	0	6¼
53.	4709	at	0	5¾
54.	248¾	at	0	5½
55.	5317	at	0	5¼
56.	4296	at	0	5
57.	9385	at	0	4¾
58.	3829⅝	at	0	4½
59.	5757	at	0	4¼
60.	6398	at	0	3¾

			s.	d.
61.	654	at	2	0
62.	6428	at	2	0
63.	3153$\frac{1}{3}$	at	3	0
64.	8751	at	3	0
65.	5764	at	4	0
66.	1513$\frac{3}{4}$	at	4	0
67.	4103	at	6	0
68.	9735	at	6	0
69.	8466$\frac{2}{3}$	at	8	0
70.	3604	at	8	0
71.	8756	at	9	0
72.	558$\frac{4}{6}$	at	9	0
73.	5768	at	11	0
74.	8385	at	11	0
75.	2104$\frac{5}{6}$	at	12	0
76.	4688	at	12	0
77.	6013	at	13	0
78.	3566	at	13	0
79.	952$\frac{1}{6}$	at	14	0
80.	4688	at	14	0
81.	2016	at	15	0
82.	3687$\frac{4}{6}$	at	16	0
83.	5898	at	17	0
84.	4751	at	18	0
85.	7641$\frac{3}{4}$	at	19	0
86.	4298	at	21	0
87.	5353	at	21	0
88.	1407$\frac{4}{7}$	at	22	0
89.	7659	at	23	0
90.	4697	at	24	0
91.	2602$\frac{4}{6}$	at	21	0
92.	2457	at	1	1
93.	739$\frac{7}{16}$	at	1	1$\frac{1}{2}$

			s.	d.
94.	2790	at	1	2
95.	188$\frac{11}{16}$	at	1	3
96.	2915	at	1	4
97.	985$\frac{7}{16}$	at	1	6
98.	9271	at	1	7
99.	829$\frac{1}{2}$	at	1	7$\frac{1}{2}$
100.	2905	at	1	8$\frac{1}{4}$
101.	379$\frac{3}{8}$	at	1	8$\frac{1}{2}$
102.	2104	at	1	9
103.	555$\frac{1}{3}$	at	1	10
104.	2117	at	1	10$\frac{1}{2}$
105.	469$\frac{1}{4}$	at	1	11
106.	2685	at	2	9
107.	876$\frac{3}{5}$	at	3	6
108.	2541	at	2	2
109.	724$\frac{1}{16}$	at	2	8
110.	4976	at	4	7
111.	653$\frac{1}{12}$	at	2	3$\frac{1}{2}$
112.	5048	at	6	3$\frac{1}{2}$
113.	583$\frac{5}{6}$	at	3	8
114.	2685	at	2	9
115.	2468$\frac{3}{8}$	at	2	3$\frac{1}{2}$
116.	268	at	7	6$\frac{1}{2}$
117.	8469$\frac{3}{8}$	at	8	6
118.	2517	at	5	3
119.	387$\frac{3}{8}$	at	4	6
120.	3715	at	9	4$\frac{1}{2}$
121.	3896$\frac{5}{8}$	at	4	9$\frac{1}{4}$
122.	2547	at	7	3$\frac{1}{2}$
123.	964$\frac{5}{6}$	at	8	10$\frac{1}{2}$
124.	3271	at	5	9$\frac{1}{4}$
125.	716$\frac{3}{8}$	at	6	11
126.	7524	at	3	5$\frac{1}{2}$

			s.	d.
127.	$728\frac{1}{3}$	at	4	8
128.	3987	at	9	$8\frac{1}{4}$
129.	$935\frac{1}{20}$	at	2	10
130.	2388	at	6	3
131.	$168\frac{1}{24}$	at	2	11
132.	3162	at	5	$8\frac{3}{4}$
133.	$623\frac{7}{12}$	at	4	10
134.	7643	at	8	7
135.	$278\frac{2}{3}$	at	3	10
136.	5736	at	9	$4\frac{3}{4}$
137.	$573\frac{5}{6}$	at	4	2
138.	2303	at	5	6
139.	$498\frac{3}{8}$	at	2	$4\frac{1}{2}$
140.	1323	at	8	$2\frac{1}{4}$
141.	$475\frac{1}{8}$	at	2	7
142.	8647	at	6	11
143.	$289\frac{11}{16}$	at	4	3
144.	7492	at	7	$9\frac{1}{2}$
145.	$585\frac{17}{60}$	at	5	1
146.	1708	at	5	$8\frac{1}{2}$
147.	$9854\frac{1}{2}$	at	5	$10\frac{1}{2}$
148.	3269	at	6	6
149.	$8219\frac{3}{8}$	at	6	$9\frac{1}{2}$
150.	6433	at	9	2
151.	$7442\frac{9}{40}$	at	4	$5\frac{1}{2}$
152.	5145	at	8	4
153.	$1089\frac{3}{4}$	at	8	$2\frac{1}{2}$
154.	$3863\frac{1}{4}$	at	17	6
155.	$4568\frac{1}{2}$	at	18	4
156.	8650	at	11	$9\frac{1}{2}$
157.	$5759\frac{1}{4}$	at	11	$1\frac{3}{4}$
158.	1201	at	12	10
159.	$9638\frac{3}{8}$	at	12	$3\frac{1}{2}$

			£.	s.	d.
160.	2768	at	0	13	$7\frac{1}{2}$
161.	$5296\frac{7}{10}$	at	0	12	$7\frac{1}{2}$
162.	6475	at	0	14	$9\frac{3}{4}$
163.	$7459\frac{7}{12}$	at	0	13	$2\frac{1}{4}$
164.	4687	at	0	15	7
165.	$9187\frac{1}{12}$	at	0	13	$6\frac{1}{2}$
166.	9621	at	0	16	$9\frac{1}{4}$
167.	$3297\frac{1}{2}$	at	0	14	$3\frac{1}{4}$
168.	4103	at	0	17	$8\frac{3}{4}$
169.	$8123\frac{1}{4}$	at	0	16	$3\frac{1}{2}$
170.	2464	at	0	18	$4\frac{1}{4}$
171.	$7546\frac{1}{2}$	at	0	16	$9\frac{3}{4}$
172.	3102	at	0	18	$5\frac{1}{2}$
173.	$2175\frac{1}{6}$	at	0	17	$10\frac{1}{2}$
174.	6765	at	0	19	$7\frac{1}{4}$
175.	$5388\frac{1}{8}$	at	0	18	$3\frac{3}{4}$
176.	5713	at	0	16	8
177.	$4637\frac{1}{8}$	at	0	19	$5\frac{1}{2}$
178.	4753	at	0	13	4
179.	$6537\frac{1}{10}$	at	0	18	$7\frac{1}{4}$
180.	3647	at	0	17.	6
181.	1708	at	2	10	0
182.	$1984\frac{1}{4}$	at	3	10	0
183.	3215	at	4	6	8
184.	$6175\frac{7}{8}$	at	1	6	8
185.	3416	at	1	5	0
186.	$9287\frac{1}{4}$	at	1	5	0
187.	4738	at	2	4	0
188.	$2751\frac{9}{10}$	at	1	4	0
189.	3898	at	2	3	4
190.	$6083\frac{1}{12}$	at	1	3	4
191.	2997	at	3	2	6
192.	$1957\frac{1}{16}$	at	1	2	6

			£.	s.	d.
193.	6864	at	1	2.	0
194.	2628$\frac{3}{5}$	at	3	2	0
195.	1154	at	3	1	8
196.	3456$\frac{5}{6}$	at	1	1	8
197.	2508	at	3	7	6
198.	3278$\frac{3}{8}$	at	2	12	6
199.	2205	at	1	11	8
200.	5713$\frac{5}{8}$	at	2	16	8
201.	4753	at	1	13	4
202.	2453$\frac{1}{3}$	at	3	15	0
203.	4362	at	2	17	6
204.	2546$\frac{2}{3}$	at	1	8	4
205.	4159	at	3	16	8
206.	3047$\frac{5}{6}$	at	2	18	4
207.	2538	at	2	17	0
208.	4276$\frac{1}{3}$	at	4	12	0
209.	7241	at	3	16	0
210.	3572	at	4	16	10
211.	4063	at	5	17	6
212.	6908	at	6	19	8
213.	1953	at	3	7	10$\frac{1}{2}$
214.	7964	at	7	9	6
215.	4679	at	8	17	8
216.	8742	at	4	16	5$\frac{1}{2}$
217.	2598	at	9	12	8$\frac{1}{4}$
218.	2687	at	12	14	7
219.	8764	at	10	17	6$\frac{3}{4}$
220.	9648	at	8	11	4$\frac{1}{2}$
221.	2784	at	11	10	2
222.	7204	at	12	16	7
223.	4121	at	13	14	8
224.	3145	at	14	17	9$\frac{1}{4}$
225.	4627	at	18	14	5

			£.	s.	d.	
1.	12 oz. 10 dwt. 12 grs.	at	3	17	6	per ounce.
2.	5 oz. 11 dwt. 10 grs.	at	3	0	0	„
3.	9 oz. 13 dwt. 17 grs.	at	1	10	0	„
4.	8 oz. 7 dwt. 3 grs.	at	3	0	0	„
5.	17 oz. 14 dwt. 8 grs.	at	0	15	0	per lb.
6.	8 oz. 5 dwt. 9 grs.	at	0	13	4	„
7.	7 oz. 18 dwt. 15 grs.	at	0	13	4	„
8.	1 lb. 3 oz. 15 dwt	at	8	4	0	„
9.	5 oz. 12 dwt. 20 grs.	at	7	8	4	„
10.	17 lbs. 10 dwt. 20 grs.	at	96	4	0	„
11.	23 oz. 5 drs. 2 scr.	at	0	3	6	per ounce.
12.	16 oz. 1 scr.	at	0	5	6	„
13.	31 oz. 4 drs. 1½ scr.	at	0	5	0	„
14.	4 oz. 2 drs. 1 scr.	at	1	4	0	per lb.
15.	31 oz. 6 drs. 2 scr.	at	0	18	0	„
16.	9 oz. 2 scr.	at	1	10	0	„
17.	36 oz. 4 drs. 1 scr.	at	0	12	0	„
18.	44 lbs. 1 oz. 6 drs.	at	1	1	8	„
19.	7 oz. 5 drs. 1 scr.	at	0	18	9	„
20.	10 oz. 7 drs. 10 grs.	at	12	7	6	„
21.	25 cwt. 2 qrs. 14 lbs.	at	3	17	6	per cwt.
22.	3 cwt. 2 qrs. 7 lbs.	at	3	6	8	„
23.	5 cwt. 1 qr. 8 lbs.	at	3	15	8	„
24.	53 cwt. 3 qrs. 17 lbs.	at	1	13	6	„
25.	72 cwt. 2 qrs. 14 lbs.	at	4	16	8	„
26.	96 cwt. 3 qrs. 8 lbs.	at	3	12	8	„
27.	27 cwt. 3 qrs. 14 lbs.	at	1	10	6	„
28.	29 cwt. 2 qrs. 14 lbs.	at	4	16	8	„
29.	7 cwt. 3 qrs. 6 lbs.	at	4	15	8	„
30.	18 cwt. 2 qrs. 16 lbs.	at	3	18	6	„
31.	9 cwt. 2 qrs. 22 lbs.	at	2	13	6	„
32.	21 cwt. 1 qr. 24 lbs.	at	4	17	8	„
33.	2 qrs. 27 lbs.	at	5	15	9	„

			£.	s.	d.	
34.	11 cwt. 13 lbs.	at	6	18	0	per cwt.
35.	18 cwt. 3 qrs. 4 lbs.	at	3	18	6	„
36.	16 cwt. 22 lbs.	at	2	13	6	„
37.	10 cwt. 12 lbs.	at	1	9	6	„
38.	35 cwt. 2 qrs. 25 lbs.	at	3	7	11	„
39.	6 cwt. 1 qr. 7 lbs.	at	32	13	4	per ton.
40.	8 cwt. 2 qrs. 14 lbs.	at	37	6	8	„
41.	16 cwt. 3 qrs. 21 lbs.	at	39	13	4	„
42.	180 cwt. 2 qrs. 7 lbs.	at	44	6	8	„
43.	12 yds. 3 qrs. 3 nls.	at	1	0	8	per yard.
44.	24 yds. 1 nl.	at	1	13	1	„
45.	57 yds. 1 qr. 3 nls.	at	1	16	8	„
46.	86 yds. 3 nls.	at	0	11	4	„
47.	1 Eng. ell 2 qrs. 2 nls.	at	0	8	4	per ell.
48.	16 Eng. ells 4 qrs. 3 nls.	at	0	17	1	„
49.	1 Fr. ell 4 qrs. 1 nl.	at	8	2	6	„
50.	11 Fr. ells 5 qrs. 3 nls.	at	20	0	0	„
51.	20 Fl. ells 1 qr. 1 nl.	at	0	13	9	„
52.	36 Fl. ells 2 qrs. 3 nls.	at	1	1	0	„
53.	16 yds. 1 ft. 1 in.	at	1	4	0	per yard.
54.	8 yds. 11 in.	at	1	7	0	„
55.	1 yd. 1 ft. 1 in.	at	6	6	3	„
56.	17 mls. 7 fur. 10 pls.	at	21	1	8	per mile.
57.	18 mls. 1 fur. 30 pls.	at	0	6	8	„
58.	1 ml. 4 fur. 38 pls.	at	1	10	0	„
59.	3 mls. 2 fur. 165 yds.	at	18	1	4	„
60.	7 mls. 6 fur. 77 yds.	at	12	7	6	„
61.	1 ml. 480 yds.	at	0	18	9	„
62.	7 mls. 960 yds.	at	1	5	8	„
63.	7 fur. 165 yds.	at	8	1	4	„
64.	36 sq. yds. 1 ft. 72 in.	at	1	1	4	per yard.
65.	8 sq. yds. 4 ft. 36 in.	at	0	11	9	„
66.	1 sq. yd. 6 ft. 18 in.	at	15	15	0	„

			£.	s.	d.	
67.	8 sq. ft. 48 in.	at	2	2	1½	per yard.
68.	72 sq. yds. 80 in.	at	6	1	0	„
69.	2 sq. yds. 5 ft. 54 in.	at	0	9	4½	„
70.	17 sq. yds. 4 ft. 16 in.	at	1	16	6	„
71.	13 sq. yds. 2 ft. 120 in.	at	1	14	6	„
72.	24 ac. 3 rds.	at	16	5	4	per acre.
73.	30 ac. 1 rd. 10 pls.	at	21	11	2	„
74.	25 ac. 32 pls.	at	16	2	8	„
75.	72 ac. 3 rds. 30 pls.	at	385	0	0	„
76.	1 ac. 37 pls.	at	1	1	2	„
77.	3 rds. 28 pls.	at	15	12	6	„
78.	131 ac. 3 rds. 2 pls.	at	110	8	4	„
79.	45 ac. 1 rd. 39 pls.	at	63	12	0	„
80.	13 ac. 2 rds. 10 pls.	at	65	10	0	„
81.	31 ac. 3 rds. 20 pls.	at	2	15	6	„
82.	108 ac. 3 rds. 14 pls.	at	3	7	8	„
83.	16 ac. 18 pls.	at	0	11	10	„
84.	25 ac. 1 rd. 11 pls.	at	1	11	6	„
85.	116 ac. 2 rds. 29 pls.	at	4	4	0	„
86.	89 ac. 3 rds. 17 pls.	at	2	12	6	„
87.	8 gal. 3 qts. 1 pt.	at	1	2	1	per gallon.
88.	18 gal. 2 qts. 1 pt.	at	0	3	6	„
89.	9 gal. 1 pt.	at	0	4	8	„
90.	27 gal. 3 qts. 1 pt.	at	0	5	6	„
91.	4 gal. 2 qts. 1 pt.	at	1	2	4	„
92.	3 qts. 1 pt.	at	0	8	4	„
93.	72 gal. 2 qts.	at	2	1	2	„
94.	1 hhd. 24 gal. 2 qts.	at	1	3	6	per hhd.
95.	3 hhd. 45 gal. 1 qt.	at	4	2	3	„
96.	48 gal. 3 qts.	at	1	8	4½	„
97.	15 hhd. 28 gal. 1 qt.	at	2	12	6	„
98.	1 punch. 28 gal. 2 qts.	at	4	4	4	per punch.
99.	6 punch. 70 gal. 1 qt.	at	3	5	4	„

			£.	s.	d.	
100.	4 punch. 49 gal. 3 qts.	at	8	2	4	per punch.
101.	1 firk. 3 gal. 1 qt.	at	3	1	6	per firkin.
102.	7 firk. 4 gal. 2 qts.	at	1	8	10	,,
103.	5 firk. 6 gal. 3 qts.	at	2	4	0	,,
104.	6 firk. 1 gal. 1 qt.	at	11	1	4	,,
105.	3 kild. 9 gal. 1 qt.	at	1	16	0	per kilder.
106.	4 kild. 12 gal. 2 qts.	at	3	4	6	,,
107.	15 kild. 15 gal. 1 qt.	at	8	4	6	,,
108.	7 kild. 10 gal. 1 qt.	at	4	2	4	,,
109.	5 kild. 1 gal. 1 qt.	at	3	6	7	,,
110.	11 kild. 14 gal.	at	1	8	9	,,
111.	37 qrs. 7 bush. 2 pks.	at	4	3	8	per quarter.
112.	72 qrs. 6 bush.	at	2	9	3	,,
113.	20 qrs. 3 bush. 1 pk.	at	2	5	4	,,
114.	11 qrs. 7 bush. 3½ pks.	at	4	0	0	,,
115.	12 qrs. 3 bush. 3 pks.	at	2	2	8	,,
116.	6 qrs. 6 bush. 3½ pks.	at	4	4	0	,,
117.	12 qrs. 1 pk.	at	3	6	0	,,
118.	12 yrs. 7 mth.	at	8	3	4	per year.
119.	17 yrs. 11 mths.	at	8	4	0¾	,,
120.	83 yrs. 10 mths.	at	5	7	6	,,
121.	20 yrs. 5 mths. 1 wk.	at	4	8	10½	,,
122.	11 mths. 3 wks.	at	0	17	6	,,
123.	3 yrs. 1 mth. 1 wk.	at	0	8	9	,,
124.	1 yr. 1 mth. 2 wks.	at	19	19	8	,,
125.	122 yrs. 7 mths. 3 wks.	at	7	11	2	,,
126.	11 mths. 3 wks. 1 dy.	at	13	13	6	per month.
127.	7 mths. 1 wk. 4 dys.	at	8	11	10	,,
128.	2 mths. 3 wks	at	4	10	0	,,
129.	10 mths. 3 wks. 5 dys.	at	19	5	0	,,
130.	80 wks. 4 dys. 12 hrs.	at	15	17	4	per week.
131.	1 wk. 1 dy. 18 hrs	at	11	1	1	,,
132.	5 wks. 2 dys. 12 hrs.	at	7	7	0	,,

BILLS OF PARCELS.

1.

			s.	d.	
51½ yards of linen	... ...	at	2	8½	per yard.
148¾ yards of linen	... ...	at	3	2	per yard.
78 yards of linen	... ...	at	3	5¾	per yard.

2.

3⅞ yards of cloth ...	... ...	at	9	3	per yard.
1½ yards of fustian	... ...	at	1	6	per yard.
2¼ yards of drugget	... ...	at	4	6	per yard.
1⅛ yards of cotton	... ...	at	1	4½	per yard.
¾ yards of lining	... ...	at	1	3	per yard.

3.

4 pounds of Congou	... ...	at	7	6	per lb.
¾ pound of fine Hyson	... ...	at	11	6	per lb.
28 pounds of raw sugar	...	at	91	0	per cwt.
6½ pounds of double-refined sugar		at	1	5½	per lb.
5¾ pounds of single-refined sugar		at	1	1	per lb.
27¾ pounds of soap...	... ...	at	0	8¾	per lb.
8 pounds 5 ounces of starch	...	at	0	11¾	per lb.

4.

50 yards of printed calico	...	at	1	4½	per yard.
17¾ yards of jaconet muslin	...	at	2	4½	per yard.
8¾ yards of cambric	... ...	at	4	4½	per yard.
32½ yards of lace ...	... ...	at	4	3	per yard.
20 yards of ribbon	... ...	at	0	10½	per yard.

5.

			s.	d.	
6 pieces of linen,	No. 1, 25	yards, at	2	4½	per yard.
	No. 2, 24¾	yards, at	2	6½	per yard.
	No. 3, 25¼	yards, at	2	9	per yard.
	No. 4, 25¾	yards, at	3	1	per yard.
	No. 5, 26	yards, at	3	3½	per yard.
	No. 6, 26½	yards, at	3	5	per yard.

6.

4¾	pounds of double-refined sugar	at	1	0½	per lb.
7	pounds of raw sugar	at	0	9¾	per lb.
¾	pound of green tea	at	7	0	per lb.
2	gallons of malt whisky ...	at	9	6	per gal.
3	dozens of London porter ...	at	4	9	per doz.

7.

1⅛	yards of superfine black cloth	at	22	6	per yard.
7/16	yard of black Genoa velvet	at	18	0	per yard.
⅞	yard of black cassimere ...	at	10	6	per yard.
¾	yard of black shalloon ...	at	2	0	per yard.
2½	yards of fine drugget ...	at	4	9	per yard.

8.

Linen... ...	7 pieces, 178½	yards, at	2	8¾	per yard.
Cambric ...	12 pieces, 96	yards, at	4	1¼	per yard.
Sheeting ...	3 pieces, 97½	yards, at	2	6	per yard.
Figured cloth,	2 pieces, 51½	yards, at	4	7¾	per yard.
Check ...	3 pieces, 78¾	yards, at	2	1¼	per yard.

9.

			s.	d.	
72¾	pounds of green tea ...	... at	6	8	per lb.
88¾	pounds of Pekoe ...	... at	4	8	per lb.
67⅛	pounds of Hyson ...	... at	8	6	per lb.
18⅓	pounds of bloom tea ...	... at	7	8	per lb.
37	pounds of best loaf sugar	... at	1	1½	per lb.
168¾	pounds of raw sugar ...	... at	0	8¾	per lb.

10.

5	pieces of cloth, each 18½ yards,	at	13	4	per yard.
8⅝	yards of silk	at	7	10	per yard.
9¾	yards of lustring	at	8	8	per yard.
53⅓	yards of linen	at	9	8	per yard.
73⅓	yards of silk velvet	at	28	4	per yard.

11.

385	yards of Scotch linen	at	3	9	per yard.
478	yards of Irish linen	at	2	5	per yard.
583	yards of Irish linen	at	2	2½	per yard.
625	yards of sheeting	at	2	8	per yard.
982	yards of cotton velvet... ...	at	6	3	per yard.

12.

5¾	yards of black cloth	at	27	6	per yard.
12⅓	yards of drab cloth	at	18	6¾	per yard.
18½	yards of brown cloth... ...	at	17	8	per yard.
26⅛	yards of olive cloth	at	14	6	per yard.
39⅓	yards of green cloth	at	12	9½	per yard.

13.

					s.	d.	
Calico,	12 pieces,	334	yards	... at	1	2¼	per yard.
Muslin,	20 pieces,	200	yards	... at	1	4⅜	per yard.
Cambric,	10 pieces,	243	yards	... at	2	9¾	per yard.
Linen,	2 pieces,	51½	yards	... at	2	8½	per yard.
Linen,	6 pieces,	148¾	yards	... at	3	2	per yard.

14.

1269	yards of sheeting	...	...	at	1	5¾	per yard.
120	pairs of boots...	...	...	at	27	3	per pair.
96	pairs of shoes...	...	...	at	14	6	per pair.
701	yards of sheeting	...	...	at	1	5	per yard.
100	barrels of herrings	...	...	at	67	6	per barl.
120	pairs of stockings	...	...	at	5	6	per pair.

15

716⅜	yards of Holland	...	...	at	6	11	per yard.
265¼	yards of cotton velvet		...	at	14	0	per yard.
358⅜	yards of cotton velvet		...	at	17	0	per yard.
964⅝	yards of Holland	...	...	at	8	10½	per yard.
186⅜	yards of silk velvet	...	...	at	32	6½	per yard.

16.

				£.	s.	d.	
3	doz. and 4 pairs of shoes ...		at	6	1	0	per doz.
8	doz. and 8 pairs of do.	...	at	5	8	6	per doz.
150	penknives ...	...	at	0	0	8⅝	each.
112	penknives ...	...	at	0	0	10½	each.
48	sets of buckles	...	at	0	1	3½	per set.
200	razors ...	...	at	0	0	11¾	each.
100	ditto ...	...	at	0	1	2⅝	each.

17.

			s.	d.	
52	yards of linen	at	3	9½	per yard.
206½	yards of ditto	at	2	4	per yard.
101	yards of broad cloth	at	21	8	per yard.
99	yards of ditto	at	19	3	per yard.
198	yards of ditto	at	15	9	per yard.
237	yards of carpet	at	2	8¾	per yard.
428½	yards of stair carpet	at	3	9½	per yard.
87¾	yards of Brussels carpet ...	at	12	8	per yard.

18.

Sheeting,	50 pieces,	3050	yards,	at	1	8	per yard.
Sheeting,	14 pieces,	2004	yards,	at	1	4¼	per yard.
Calico,	50 pieces,	1400	yards,	at	1	10½	per yard.
Linen,	12 pieces,	309	yards,	at	3	9	per yard.
Linen,	12 pieces,	310	yards,	at	4	0	per yard.
Sail cloth,	20 pieces,	2055	yards,	at	1	4¼	per yard.
Sail cloth,	10 pieces,	982¾	yards,	at	1	3¾	per yard.
Sail cloth,	10 pieces,	1003¾	yards,	at	1	3¾	per yard.

19.

cwt.	qrs.	lbs.					
8	2	14	of whale oil	at	37	4	per cwt.
18	2	7	of tallow	at	44	4	per cwt.
25	1	10½	of soap	at	46	8	per cwt.
11	0	13	of tallow	at	69	0	per cwt.

20.

18	2	16	of sugar ...	at	39	5	0	per ton.
9	2	22	of sugar ...	at	26	15	0	per ton.
0	2	27	of tobacco ...	at	57	17	6	per ton.
18	2	7	of sugar ...	at	22	3	4	per ton.
6	1	7	of currants ...	at	16	6	8	per ton.

21.

cwt.	qrs.	lbs.				s.	d.	
36	1	12	of loaf sugar	...	... at	85	6	per cwt.
42	2	15	of raw sugar	...	... at	56	9	per cwt.
53	3	18	of molasses	...	... at	28	3	per cwt.
64	2	22	of raisins	...	... at	58	4	per cwt.
75	3	16	of currants	...	... at	88	8	per cwt.
87	2	26	of rice ...	...	... at	30	4	per cwt.

22.

last.	qrs.	bush.				s.	d.	
18	2	3	of old wheat	...	... at	62	6	per qr.
24	3	4	of new wheat	...	... at	52	9	per qr.
35	5	6	of rye ...	...	... at	30	6	per qr.
43	6	7	of barley ...	...	... at	32	8	per qr.
57	8	5	of oats ...	...	... at	22	10	per qr.
68	9	6	of beans ...	...	... at	28	3	per qr.

23.

cwt.	qrs.	lbs.				£.	s.	d.	
17	1	19	of sugar	...	... at	78	16	0	per ton.
17	2	24	of sugar	...	... at	4	17	6	per cwt.
27	1	19	of sugar	...	... at	5	5	0	per cwt.
19	3	16	of rice	...	... at	1	10	4	per cwt.
19	1	27	of tobacco	...	... at	15	10	6	per cwt.
21	1	2	of sugar	...	... at	3	17	8	per cwt.
3	0	6	of nutmegs	...	... at	16	8	9	per cwt.

24.

18	3	4	of raisins	...	... at	3	18	6	per cwt.
23	3	0	of pepper	...	... at	4	17	8	per cwt.
16	0	22	of ginger	...	... at	2	13	6	per cwt.
15	3	18	of currants	...	... at	4	11	9	per cwt.
6	2	7	of figs	...	... at	2	19	3	per cwt.
7	3	18	of alum	...	... at	0	17	$6\frac{1}{2}$	per cwt.
72	3	19	of linseed	...	... at	3	17	4	per cwt.
16	2	0	of tea	...	... at	2	6	11	per cwt.

COMMISSION, BROKERAGE, AND INSURANCE.

Find the commission, &c., on the following sums, at R per cent. :—

	£.	s.	d.	R.
1.	500	0	0	$2\frac{1}{2}$
2.	369	0	0	2
3.	1900	0	0	$5\frac{7}{8}$
4.	748	11	8	3
5.	780	0	0	$5\frac{1}{8}$
6.	1500	0	0	$6\frac{1}{2}$
7.	4360	8	4	3
8.	202	1	8	$2\frac{1}{2}$
9.	240	16	8	$3\frac{1}{4}$
10.	484	12	6	$2\frac{1}{2}$
11.	985	16	$1\frac{3}{4}$	3
12.	397	15	$4\frac{3}{4}$	4
13.	953	18	$3\frac{1}{2}$	$1\frac{5}{8}$
14.	1764	16	6	$3\frac{1}{2}$
15.	810	7	0	$1\frac{3}{8}$
16.	491	15	$5\frac{1}{4}$	2
17.	628	13	$8\frac{1}{2}$	$2\frac{1}{4}$
18.	479	19	3	5
19.	958	16	$5\frac{1}{2}$	$3\frac{1}{2}$
20.	1242	0	0	$\frac{1}{8}$
21.	464	16	0	$9\frac{1}{2}$
22.	573	16	$10\frac{1}{2}$	$\frac{1}{8}$
23.	3561	11	$7\frac{1}{2}$	$8\frac{1}{8}$
24.	759	10	5	$\frac{3}{4}$
25.	897	10	$7\frac{3}{4}$	1

	£.	s.	d.	R.	
26.	692	16	8	$\frac{1}{3}$	
27.	436	13	0	$2\frac{3}{4}$	
28.	5741	11	10	$\frac{1}{4}$	
29.	799	17	$10\frac{3}{4}$	$1\frac{1}{2}$	
30.	756	19	$8\frac{1}{4}$	$\frac{5}{8}$	
31.	629	13	4	$12\frac{1}{2}$	
32.	845	0	0	$\frac{1}{2}$	
33.	3561	11	$7\frac{1}{2}$	$8\frac{1}{3}$	
34.	640	0	0	$\frac{1}{4}$	
35.	5275	16	$7\frac{1}{2}$	$4\frac{3}{4}$	
36.	978	19	$2\frac{1}{2}$	$\frac{1}{2}$	
37.	576	14	$11\frac{1}{2}$	$2\frac{1}{2}$	
38.	538	0	0	$\frac{1}{10}$	
39.	535	10	0	$7\frac{1}{2}$	
40.	360	0	0	$\frac{1}{8}$	
41.	2184	0	0	$4\frac{3}{8}$	
42.	583	10	0	$2\frac{3}{4}$	
43.	212	15	0	1	
44.	734	0	0	$6\frac{3}{4}$	
45.	3270	0	0	$3\frac{7}{8}$	
46.	654	15	0	2	guineas.
47.	695	15	0	$2\frac{1}{2}$	„
48.	945	7	6	5	„
49.	1570	0	0	$3\frac{1}{2}$	„
50.	884	10	0	6	„
51.	6240	0	0	$3\frac{1}{2}$	„
52.	579	0	0	$1\frac{1}{2}$	„
53.	842	10	0	7	„
54.	1960	10	0	$1\frac{1}{4}$	„
55.	789	16	8	$1\frac{3}{4}$	„
56.	2750	0	0	$4\frac{1}{4}$	„

57. What must be paid for insuring £360 on household furniture, at 5*s.* per cent. ?
58. What premium must be paid for insuring £695. 15*s.* on a cargo of flax from Rotterdam to Dundee, at $2\frac{1}{2}$ guineas per cent. ?
59. What premium must be paid for insuring £538 on household furniture, at 10*s.* per cent. ?
60. What premium must be paid for insuring £212. 15*s.* on a cargo of wood from Orkney to Leith, at 1 per cent. ?
61. What must be paid for insuring £1550 on a ship in harbour for 6 months, at 3*s.* per cent. ?
62. What must be paid for insuring £598 on household furniture, at 4*s.* 8*d.* per cent. ?
63. What will be the insurance of a house worth £681. 5*s.*, at 5*s.* 3*d.* per cent. ?
64. What is the insurance on a ship's cargo worth £15,423, at $19\frac{3}{5}$ per cent. ?
65. What must be paid for insuring a house worth £436. 13*s.* for $2\frac{1}{2}$ years, at $2\frac{3}{4}$ per cent. per annum ?
66. At 2 guineas per cent., to what amount must I insure a ship's cargo worth £500, so that in case of total loss I may recover its full value ?
67. What must be paid for insuring a ship's cargo worth £550. 19*s.* 2*d.*, to recover its full value in case of total loss ?—insurance at $12\frac{1}{2}$ per cent. ?
68. What sum must be insured, at 6 guineas per cent., to recover £1560 in case of total loss ?
69. What sum must be insured, at $5\frac{3}{4}$ per cent., to recover £1938 in case of total loss ?
70. What sum must be insured at 8 guineas per cent., to recover £835. 10*s.* in case of total loss ?
71. At $3\frac{1}{4}$ per cent., what will a broker receive for selling goods to the amount of £796 ?

SIMPLE INTEREST.

Find the simple interest of the following sums, for N years, at R per cent. per annum :—

	£.	s.	d.	N.	R.
1.	825	0	0	1	3
2.	364	0	0	1	$4\frac{1}{2}$
3.	250	10	0	1	5
4.	690	0	0	3	$4\frac{1}{2}$
5.	635	18	$4\frac{1}{2}$	$3\frac{1}{2}$	3
6.	7000	0	0	3	$2\frac{1}{2}$
7.	619	17	6	$7\frac{1}{2}$	4
8.	327	16	8	7	$4\frac{1}{2}$
9.	4268	14	0	$3\frac{1}{2}$	4
10.	387	15	8	7	5
11.	725	13	3	$3\frac{1}{2}$	$4\frac{1}{4}$
12.	840	16	6	3	5
13.	170	0	0	$1\frac{1}{2}$	5
14.	1049	16	6	$6\frac{1}{3}$	$4\frac{1}{2}$
15.	617	8	9	10	$4\frac{1}{2}$
16.	486	0	0	5	5
17.	2346	0	0	$9\frac{7}{12}$	$4\frac{3}{4}$
18.	857	16	8	12	$3\frac{3}{4}$
19.	273	3	$6\frac{1}{2}$	$13\frac{3}{4}$	4
20.	319	0	6	$5\frac{3}{4}$	$3\frac{3}{4}$
21.	712	6	0	$\frac{2}{3}$	$7\frac{1}{2}$
22.	205	15	0	$\frac{1}{4}$	4
23.	924	0	0	$\frac{1}{6}$	5
24.	1205	0	0	$\frac{1}{2}$	4
25.	1848	16	0	$7\frac{9}{12}$	$3\frac{3}{4}$
26.	825	13	8	$8\frac{5}{12}$	$4\frac{3}{4}$

Find the simple interest of the following sums, for N days, at R per cent. per annum:—

	£.	s.	d.	N.	R.
1.	121	13	4	317	5
2.	456	5	0	132	$3\frac{1}{2}$
3.	912	10	0	61	$4\frac{2}{3}$
4.	217	10	0	73	5
5.	2026	13	4	146	$3\frac{3}{4}$
6.	146	8	9	185	5
7.	319	7	6	45	$3\frac{1}{2}$
8.	516	13	4	219	4
9.	1401	12	0	60	$3\frac{1}{6}$
10.	45	12	6	56	5
11.	456	5	0	207	$2\frac{3}{4}$
12.	121	13	4	47	5
13.	304	3	4	119	$4\frac{1}{2}$
14.	1876	13	4	292	$4\frac{3}{6}$
15.	273	15	0	35	$4\frac{1}{2}$
16.	188	6	8	146	5
17.	486	13	4	315	$2\frac{1}{2}$
18.	60	16	8	157	5
19.	573	15	0	73	$3\frac{3}{4}$
20.	309	11	8	219	5
21.	1480	0	0	73	$3\frac{1}{6}$
22.	232	13	9	230	5
23.	973	6	8	97	$3\frac{1}{6}$
24.	1216	13	4	350	5
25.	1368	15	0	69	$2\frac{3}{4}$
26.	608	6	8	208	2
27.	304	3	4	357	$4\frac{1}{2}$
28.	618	15	0	292	3
29.	996	17	6	146	3
30.	547	10	0	70	$4\frac{1}{2}$
31.	1396	2	6	115	5

1. Find the amount of 350 guineas in $4\frac{1}{2}$ years, at $3\frac{3}{4}$ per cent. per annum.
2. What sum will amount to £347. 5*s.* in $3\frac{1}{2}$ years, at $4\frac{1}{2}$ per cent. per annum?
3. What sum will amount to £411. 5*s.* in $3\frac{1}{2}$ years, at 5 per cent. per annum?
4. What sum will amount to £142. 3*s.* 9*d.* in $2\frac{3}{4}$ years, at 5 per cent. per annum?
5. What sum, at 4 per cent. per annum, will amount to £442. 10*s.* in $4\frac{1}{2}$ years?
6. What sum, at $3\frac{3}{4}$ per cent. per annum, will amount to £323. 10*s.* $3\frac{3}{4}$*d.* in 7 years?
7. What sum will gain £57. 12*s.* in $4\frac{1}{2}$ years, at 4 per cent. per annum?
8. What sum will amount to £217. 0*s.* $7\frac{1}{2}$*d.* in $3\frac{1}{2}$ years, at $4\frac{1}{2}$ per cent. per annum?
9. What sum will amount to £27 in 1 year, at 5 per cent. per annum?
10. At what rate per cent. will £250 amount to £300. 12*s.* 6*d.* in $4\frac{1}{2}$ years?
11. At what rate per cent. will £478 amount to £567. 12*s.* 6*d.* in $3\frac{3}{4}$ years?
12. At what rate per cent. will the interest of £345 be £93. 3*s.* in 6 years?
13. At what rate per cent. will £152. 12*s.* 6*d.* amount to £167. 17*s.* 9*d.* in $2\frac{1}{2}$ years?
14. At what rate per cent. will £256. 5*s.* amount to £323. 10*s.* $3\frac{3}{4}$*d.* in 7 years?
15. At what rate per cent. will the interest of £1425, in $4\frac{1}{2}$ years, be £288. 11*s.* 3*d.*?
16. At what rate per cent. will £150 double itself in 8 years?
17. In what time will £305 amount to £388. 17*s.* 6*d.*, at 5 per cent. per annum?

18. In what time will £452. 10*s*. amount to £644. 16*s*. 3*d*., at $4\frac{1}{4}$ per cent. per annum?
19. In what time will 100 guineas amount to £140. 8*s*. 9*d*., at $3\frac{3}{4}$ per cent.?
20. In what time will 200 guineas amount to £259. 1*s*. 9*d*., at $4\frac{1}{4}$ per cent.?
21. In what time will £100 double itself, at 5 per cent. per annum?
22. In what time will £100 double itself, at 4 per cent. per annum?
23. In what time will £300 double itself, at 4 per cent. per annum?
24. In what time will £1000 treble itself, at 3 per cent. per annum?
25. In what time will £100 amount to £1000, at 5 per cent. per annum?
26. In what time will £1000 amount to £5000 at $4\frac{1}{2}$ per cent. per annum?
27. In what time will £1 amount to £1000, at 5 per cent. per annum?
28. What is the simple interest of £737. 12*s*. 6*d*. for $\frac{3}{4}$ year, at $4\frac{1}{2}$ per cent. per annum?
29. What is the interest of £75. 15*s*. for 146 days, at 5 per cent. per annum?
30. What is the interest of 12*s*. 6*d*. for 1 year and a quarter, at 5 per cent. per annum?
31. In what time will £188. 6*s*. 8*d*. amount to £192. 2*s*., at 5 per cent. per annum?
32. In what time will £232. 13*s*. 9*d*. amount to £240. 0*s*. $4\frac{1}{2}$*d*. at 5 per cent. per annum?
33. Required the interest of £326. 15*s*. for 8 weeks and 5 days, at 4 per cent. per annum.
34. Required the amount of £246. 15*s*. for 3 years 6 weeks and 4 days, at $2\frac{1}{2}$ per cent. per annum.

COMPOUND INTEREST.

Find the compound interest of the following sums, for N years, at R per cent. per annum:—

	£.	s.	d.	N.	R.
1.	35	0	0	2	5
2.	291	13	4	2	4
3.	500	0	0	2	$2\frac{1}{2}$
4.	373	6	8	2	$3\frac{3}{4}$
5.	33	6	8	3	5
6.	260	8	4	3	4
7.	466	13	4	3	$2\frac{1}{2}$
8.	2133	6	8	3	$3\frac{3}{4}$
9.	750	0	0	$2\frac{1}{2}$	5
10.	746	13	4	$2\frac{1}{4}$	$3\frac{3}{4}$
11.	6510	8	4	4	4
12.	725	0	0	4	5
13.	2666	13	4	4	$2\frac{1}{2}$
14.	166	13	4	4	5
15.	5333	6	8	4	$3\frac{3}{4}$
16.	183	6	8	$3\frac{1}{2}$	6
17.	254	13	4	$3\frac{3}{4}$	6
18.	20345	1	$0\frac{1}{2}$	5	4
19.	3333	6	8	5	5
20.	406	18	$0\frac{1}{4}$	$4\frac{1}{2}$	4
21.	525	0	0	5	$4\frac{1}{2}$
22.	650	0	0	$4\frac{3}{4}$	$3\frac{1}{2}$
23.	310	12	6	$5\frac{1}{4}$	4
24.	500	0	0	6	3
25.	370	0	0	6	4
26.	15	10	0	9	$3\frac{1}{2}$

27. What is the compound interest of £410 for $2\frac{1}{2}$ years, at $4\frac{1}{2}$ per cent. per annum?—the interest being paid half-yearly.
28. What is the compound interest of £685. 18*s*. 6*d*. for 2 years, at 5 per cent. per annum?—the interest being paid half-yearly.
29. What is the compound interest of £300 for $2\frac{1}{2}$ years, at 5 per cent. per annum?—the interest being paid half-yearly.
30. What is the compound interest of £820 for $2\frac{1}{2}$ years, at $4\frac{1}{2}$ per cent. per annum?—the interest being paid half-yearly.
31. What is the compound interest of £700 for 3 years, at 5 per cent. per annum?—the interest being paid half-yearly.
32. What is the amount of £500 for $3\frac{1}{2}$ years, at 10 per cent. per annum?—the interest being paid half-yearly.
33. What is the amount of £100 for 2 years, at 5 per cent. per annum?—the interest being paid quarterly.
34. What is the amount of £500 for $2\frac{1}{4}$ years, at 8 per cent. per annum?—the interest being paid quarterly.
35. What sum, at 5 per cent. per annum, will amount to £57. 17*s*. 7$\frac{1}{2}$*d*. in 3 years' time?
36. What sum, at 5 per cent. per annum, will amount to £1130. 1*s*. 3*d*. in $2\frac{1}{2}$ years?
37. What sum, at 5 per cent. per annum, will amount to £115. 15*s*. 3*d*. in 4 years?
38. What sum will amount to £3781. 11*s*. 6*d*. in 5 years, at 5 per cent. per annum?
39. What is the compound interest on £678. 16*s*. for 6 years, at $3\frac{1}{2}$ per cent. per annum?

DISCOUNT.

1. What is the discount of £375. 10*s.*, due 3 years hence, at 4 per cent. per annum?
2. What is the discount of £500, due 4 years hence, at 5 per cent. per annum?
3. What is the discount of £400 for 2 years, at 5 per cent. per annum?
4. What is the discount of £275. 6*s.* 8*d.* for 18 months, at $4\frac{1}{2}$ per cent. per annum?
5. What is the discount of £355. 5*s.* for 4 months, at $4\frac{1}{2}$ per cent. per annum?
6. What is the discount of £370. 4*s.* $8\frac{1}{4}d.$, due in 15 months, at $4\frac{5}{6}$ per cent. per annum?
7. What is the present worth of £150, payable in 3 months, at 5 per cent. per annum?
8. What is the discount of £690. 3*s.* 9*d.* for 9 months, at 3 per cent. per annum?
9. What is the discount of £283. 0*s.* 5*d.*, due in 7 months, at 5 per cent. per annum?
10. What is the present worth of £150. 16*s.* 4*d.*, due 3 months hence, at 5 per cent. per annum?
11. What is the present worth of £705. 10*s.*, due 8 months hence, at $4\frac{1}{2}$ per cent. per annum?
12. What is the discount of £120, payable 15 months hence, at 5 per cent. per annum?
13. What is the discount of £725, due 10 months hence, at $4\frac{1}{2}$ per cent. per annum?
14. What is the present worth of £423, due 9 months hence, at 5 per cent. per annum?
15. What is the present worth of £135. 10*s.*, due 8 months hence, at 5 per cent. per annum?

16. What is the discount on a bill of £65, due 2 months hence, at 5 per cent. per annum?
17. What is the discount of £296. 15*s*., due in 16 months, at $4\frac{1}{2}$ per cent. per annum?
18. What is the discount of £298. 0*s*. 10*d*., due 11 months hence, at 4 per cent. per annum?
19. What is the discount of £273. 4*s*. 6*d*., due in 15 months, at 5 per cent. per annum?
20. What is the discount of £600, due 8 months hence, at $10\frac{5}{7}$ per cent. per annum?
21. What is the discount of £241. 12*s*. 4*d*. for 146 days, at $4\frac{1}{3}$ per cent. per annum?
22. What is the present worth of £399. 13*s*. 4*d*., payable in 73 days, at 5 per cent.?
23. What is the present worth of £39. 5*s*., due in 60 days, at 5 per cent. per annum?
24. What is the discount of £497. 3*s*. 4*d*. for 315 days, at $2\frac{1}{3}$ per cent. per annum?
25. What is the discount of £45. 12*s*. 6*d*. for 56 days, at 5 per cent. per annum?
26. What is the present worth of £317. 11*s*. 1*d*., payable in 357 days, at $4\frac{1}{2}$ per cent. per annum?
27. What is the discount of £117. 12*s*., due 219 days hence, at $3\frac{1}{2}$ per cent. per annum?
28. What is the discount of £981. 8*s*. 4*d*. for 97 days, at $3\frac{1}{8}$ per cent. per annum?
29. What is the discount of £1942. 7*s*. for 292 days, at $4\frac{3}{8}$ per cent. per annum?
30. What is the present worth of £320. 15*s*. $0\frac{1}{4}$*d*., due 45 days hence, at $3\frac{1}{2}$ per cent. per annum?
31. What is the discount of £370, due in 100 days, at $4\frac{1}{2}$ per cent. per annum?
32. What is the discount on £246. 16*s*. from March 26 to June 23, both days included, at $3\frac{3}{4}$ per cent.?

PURCHASING OF STOCK.

1. What is given for £8000 stock in the 3 per cents. at 92?
2. What income will be derived from £7360, laid out in the purchase of 3 per cent. stock, at 92?
3. What is given for £500 stock in the 4 per cents. at 82⅞?
4. What income will be derived from £207. 3*s*. 9*d*., laid out in the purchase of 4 per cent. stock, at 82⅞?
5. What is the purchase of £800 stock in the 3½ per cents. at 198½?
6. What income will be derived from £1588, laid out in the purchase of 3½ per cent. stock, at 198½?
7. What is the purchase of £6000 stock in the 3 per cent. consolidated annuities, at 63⅜?
8. What is the purchase of £1200 stock in the 3 per cent. consols, at 61¼?
9. What is the purchase of £900 stock, at 175½ per cent.?
10. The 4 per cents. being at 82⅛, what must be given for £1000 stock?
11. What must be given for £2400 stock, at 89½ per cent.?
12. What is the value of £3400 annuities, at 213¼ per cent.?
13. What is given for £5050 stock in the 3 per cents. at 85⅜?
14. What is given for £926 bank stock, at 130½ per cent.?
15. What is the purchase of £1752 bank annuities, at 115⅝ per cent.?
16. What is the value of £2680 Russian stock, at 110 per cent.?
17. What is given for £250. 15*s*. in the 4 per cents. at 154¾?
18. What is the purchase of £1558. 10*s*. in the 5 per cent. stock, at 95¾?
19. What is the value of £640. 8*s*. stock in the 3 per cents. at 120?

20. What is the value of £1370. 15*s.* stock, at 205$\frac{7}{8}$ per cent.?
21. How much stock, at 168$\frac{1}{2}$ per cent., is bought for £1348?
22. How much stock in the 5 per cents., at 84$\frac{1}{8}$, can be bought for £1009. 10*s.*?
23. How much 3 per cent. stock, at 65$\frac{3}{4}$, may be bought for £4734?
24. How much stock at 195$\frac{1}{4}$ is bought for £1610. 16*s.* 3*d.*?
25. How much 4 per cent. stock, at 84$\frac{7}{8}$, is bought for £6178. 18*s.*?
26. The 4 per cents. being at 85$\frac{3}{8}$, how much stock can be purchased for £4311. 8*s.* 9*d.*?
27. How much 5 per cent. Navy Stock, at 100$\frac{3}{8}$, is bought for £1606?
28. The 4 per cents. being at 93$\frac{1}{3}$, how much stock can be purchased for £950?
29. How much stock, at 178$\frac{1}{2}$, may be purchased for £2400?
30. How much 3 per cent. stock, at 61, is bought for £750?
31. What income will arise from investing £1009. 10*s.* in the 3 per cents., at 84$\frac{1}{8}$?
32. What income will arise from £4311. 8*s.* 9*d.*, invested in the 3 per cents., at 85$\frac{3}{8}$?
33. What income shall I derive from laying out £2000 in the 3 per cent. consols, at 88$\frac{1}{2}$?
34. What income shall I derive from laying out £2000 in the 3 per cents., at 69?
35. What income will arise from investing £3000 in the 3 per cents., at 90$\frac{1}{2}$?
36. What income will arise from £1000, invested in the 3 per cents., at 93$\frac{1}{4}$?
37. What income will arise from £2500, invested in the 3 per cents., at 72$\frac{1}{2}$?
38. What income will be derived from investing £2500 in the 3$\frac{1}{2}$ per cents., at 65?
39. What income shall I derive from laying out £2500 in the 3 per cents., at 71$\frac{1}{2}$?

40. What amount of stock in the $3\frac{1}{2}$ per cents. produces the same amount of income as £2316. 13*s*. in the 3 per cents. ?

41. What rate of interest arises from money invested in the 7 per cents., at 175 ?

42. What rate of interest arises from money invested in the $10\frac{1}{2}$ per cents., at 180 ?

43. What rate of interest arises from money invested in the 4 per cents., at $91\frac{3}{7}$?

44. What rate of interest arises from money invested in the 3 per cents., at 57 ?

45. What rate of interest arises from money invested in the 5 per cents., at 95 ?

46. What rate of interest arises from money invested in the 3 per cents., at 48 ?

47. With 3 per cents. at $84\frac{1}{2}$, and $3\frac{1}{2}$ per cents. at 87, into which stock will it be most advantageous to buy ?

48. With 3 per cents. at $74\frac{1}{2}$, and $4\frac{1}{2}$ per cents. at $92\frac{1}{8}$, into which stock will it be most advantageous to buy ?

49. The 3 per cents. being at $84\frac{1}{8}$, and the $3\frac{1}{2}$ per cents. at $96\frac{1}{4}$, into which will it be most advantageous to buy ?

50. The $2\frac{1}{2}$ per cents. being at 84, and the 3 per cents. at $108\frac{1}{2}$, into which will it be most advantageous to buy ?

51. The 3 per cents. being at $72\frac{1}{4}$, and the 5 at $118\frac{3}{8}$, into which will it be most advantageous to buy ?

52. The four per cents. being at 90, and the 3 per cents. at 72, into which will it be most advantageous to buy ?

53. A person buys £650 stock at $76\frac{1}{2}$, and sells it at $95\frac{5}{8}$: what does he gain ?

54. A person purchases railway shares to the amount of £2500, when they are $75\frac{1}{2}$, and sells them when they have risen to $91\frac{1}{4}$: what does he gain ?

55. A person lays out £1000 in railway shares, when they are at $5\frac{1}{2}$ per cent. discount, and sells them again at $10\frac{1}{4}$ per cent. premium: what does he gain ?

56. How much 4 per cent. stock can be purchased by the transfer of £1000 stock from the 3 per cents. at 72, to the 4 per cents. at 90?

57. How much 3 per cent. stock can be purchased by the transfer of £1750 stock from the 4 per cents. at 90, to the 3 per cents. at 69?

58. A person transfers £1000 stock from 4 per cents. at 90, to 3 per cents. at 72: find the alteration in his income.

59. A person transfers £10,000 from 3 per cents. at 65, to 4 per cents. at $82\frac{1}{2}$: find the alteration in his income.

60. A person transfers £1750 from 4 per cents. at 90, to 3 per cents. at 69: find the alteration in his income.

61. A person has £2350 stock in the Danish 3 per cents. at $75\frac{1}{4}$, which he transfers into the Russian 5 per cents. when at $110\frac{7}{8}$: required the alteration in his income?

62. A person lays out £1000 in the purchase of 3 per cent. consols when they are at $81\frac{5}{8}$: what are they at when he gains £100 by selling out?

63. Find the value of a legacy of £5000 stock in the 3 per cent. consols, when they are at $76\frac{1}{2}$; the legacy being subject to a duty of 10 per cent.

64. Find the value of a legacy of £2000 stock in the 3 per cent. consols at $68\frac{1}{4}$; the legacy being subject to a duty of 3 per cent.

65. By purchasing railway shares at $22\frac{1}{2}$ per cent. discount, and by selling them at 9 per cent. premium, I gained 300 guineas: what was the original sum that I expended?

66. A person has a quantity of stock in the 3 per cents. at 72, which he transfers to the 4 per cents. at 90, and so increases his income by £10: how much had he in the 3 per cents.?

67. If money in the 4 per cents. pays an interest of £4. 7*s.* 6*d.* per cent., what is the price of stock?

PROFIT AND LOSS.

1. Bought 12 yards of cloth at 9*s.* 8*d.* a yard, and sold it at 11*s.* 6*d.*: what did I gain?
2. Bought 428 yards of cloth at 14*s.* 8*d.* a yard, and sold it at 16*s.* 3*d.*: what did I gain?
3. Bought 257 cwt. at £3. 3*s.* 6*d.* per cwt., and sold at 7½*d.* per pound: how much did I gain or lose?
4. Sold 144 lbs. of tea for £57. 10*s.*, which cost me 6*s.* 8*d.* per pound: what did I gain or lose?
5. Bought 57 cwt. of sugar at £4. 3*s.* 6*d.* per cwt.: what must I sell it at per pound to gain £21. 7*s.* 6*d.*?
6. Bought 1752 yards of cloth for £657: what must I sell it at per English ell to gain £131. 8*s.*?
7. If a chest of tea, weighing 87½ lbs., cost £19. 1*s.* 3*d.*, at what rate per lb. must it be retailed to gain £5 by it?
8. A merchant bought 7 pieces of cloth, each 27 yards, for £55. 12*s.*, and sold 56 yards of it at 5*s.* 3½*d.*: at what rate must he sell the remainder to gain £3. 11*s.*?
9. A merchant bought 138 gallons of wine at 10*s.* a gallon, of which he retained 18 gallons: at what price per gallon must he sell the remainder, that he may have his own for nothing, and clear £1. 2*s.* 6*d.* besides?
10. A grocer mixes together 72 lbs. of currants at 4*d.*, 24 lbs. at 6*d.*, 48 lbs. at 9*d.*, and 96 lbs. at 11*d.* per pound: at what price per pound must he sell the mixture to gain 50*s.*?
11. A person buys 63 gallons of gin for £23. 12*s.* 6*d.*, with which he mixes 9 gallons of water: at what price per gallon must he sell the mixture to gain £4. 5*s.* 6*d.*?

12. Bought at 1*s.*, and sold at 1*s.* 1½*d.*: what is the gain per cent.?
13. If a tradesman gain 2*d.* on an article which he sells for 1*s.* 2*d.*, what does he gain per cent.?
14. Bought 150 yards of cloth at 30*s.* a yard, and sold at 27*s.* a yard: what do I gain or lose per cent.?
15. Bought 33½ yards of cloth for £25. 2*s.* 6*d.*, and retailed it at 18*s.* 3*d.* a yard: what do I gain or lose per cent.?
16. If I buy a chest of tea weighing 84 lbs. for £22. 8*s.*, and retail it at 6*s.* per lb., what do I gain or lose per cent.?
17. How much per cent. is gained or lost by purchasing sugar at £3. 10*s.* per cwt., and retailing it at 9*d.* per pound?
18. If cloth be purchased at 12*s.* 6*d.* per English ell, and sold at 12*s.* per yard, how much is gained or lost per cent.?
19. A merchant has tobacco which cost him 2*s.* 9*d.* per pound; but from a depreciation he sells it at the rate of 2*s.* 4*d.* per lb.: what will he lose per cent.?
20. Bought 2688 yards of cambric at 8*s.* 8*d.* per yard, and sold ¼ at 10*s.* 2*d.*, and ⅓ at 10*s.* 11½*d.*: what must he sell the remainder at per yard to gain £304. 14*s.* 8*d.*?
21. Bought 50 yards of muslin at 3*s.* 4*d.* per yard, of which 15 yards were sold at 4*s.* a yard, 20 yards at 3*s.* 10*d.*, five yards at 3*s.* 6*d.*, and the rest at 3*s.* 8*d.*: how much per cent. was gained by the whole?
22. If 60 yards of Holland cost £18. 0*s.* 5*d.*, how must I sell it per yard to gain 8 per cent.?
23. Bought an article for 30*s.*: what must I sell it for to gain 10 per cent. on the prime cost?
24. Bought cloth at 6*s.* 8*d.* per yard, which was sold at a loss of 15 per cent.: what was the selling price?
25. Bought cloth at 6*s.* 8*d.* per yard: what must I sell it at to clear 15 per cent.?
26. Bought tobacco at £10. 10*s.* per cwt.: what must it be sold at per lb. to clear 10 per cent.?

27. If sugar be bought at £3. 16*s*. 8*d*. per cwt., how must it be sold per lb. to clear 15 per cent. ?
28. By selling tea at 6*s*. 4*d*. per lb. a grocer lost 6 per cent.: what did it cost per pound ?
29. By selling tea at 8*s*. 3*d*. per pound I gain 10 per cent.: what did it cost per pound ?
30. By selling cloth at 17*s*. 6*d*. a yard I clear 12 per cent.: what did it cost me per yard ?
31. By selling cambric at 7*s*. 8*d*. a yard 8 per cent. was lost: what was the prime cost per yard ?
32. By selling cotton wool at £13. 6*s*. per cwt. I lost 5 per cent.: what did it cost per pound ?
33. If 6 cwt. of sugar cost 20 guineas, at what rate per pound must it be sold to clear 20 per cent. ?
34. Bought 1752 yards of cloth for £657: what must it be sold at per English ell to clear 20 per cent. ?
35. By selling wine at $1\frac{1}{2}$ guineas per doz. $12\frac{1}{2}$ per cent. was lost: what was the prime cost ?
36. What is the cost price of an article which, when sold for 14*s*., realizes a profit of 20 per cent. ?
37. If I buy sugar at £3. 13*s*. 6*d*. per cwt., at what rate per pound must I sell it to gain $12\frac{1}{2}$ per cent. ?
38. A person mixes 9 gallons of water with 63 gallons of gin which cost £23. 12*s*. 6*d*.: what does he gain per cent. by selling the mixture at 7*s*. 9*d*. per gallon ?
39. A person bought a cask of wine containing 42 gallons for £36: at what rate must he sell it to gain $12\frac{1}{2}$ per cent. ?
40. If I buy 28 pieces of stuffs at £4 a piece, and sell 10 of them at £6 per piece, and 3 at £5—at what rate per piece must I sell the rest to gain 20 per cent. ?
41. What must I charge per yard for linen, to obtain three shillings per yard, allowing a discount of 10 per cent. ?
42. Bought cloth at 14*s*. 3*d*. per yard: what must I charge it per yard to clear $16\frac{2}{3}$ per cent., after allowing a discount of 5 per cent. ?

43. What must I charge per pound to obtain $9\frac{1}{4}d.$ per pound, after allowing a discount of $7\frac{1}{2}$ per cent. ?

44. Bought silk at 16*s.* $7\frac{1}{2}d.$ per lb.: what must I sell it at to clear $12\frac{1}{2}$ per cent. profit, after allowing a discount of 5 per cent. ?

45. Bought sheeting at 2*s.* per yard: what must I sell it at to clear 20 per cent., after allowing a discount of 4 per cent. ?

46. What must I charge per cwt. for rice, to get 32*s.* 6*d.* per cwt., after allowing $2\frac{1}{2}$ per cent. discount ?

47. By selling flax at £72 per ton I lost 10 per cent.: what should I have gained or lost per cent. by selling it at £78 per ton ?

48. By selling cloth at 20*s.* a yard I gained $16\frac{2}{3}$ per cent.: what should I have gained or lost per cent. by selling it at 18*s.* per yard ?

49. By selling barley at 20*s.* per quarter I lost 5 per cent.: what should I have gained or lost per cent. by selling it at 22*s.* per quarter ?

50. By selling sugar at 80*s.* per cwt. I gained $10\frac{3}{4}$ per cent.: what should I have gained or lost per cent. by selling it at 70*s.* per cwt. ?

51. By selling cloth at 15*s.* a yard a draper lost 10 per cent.: at what price per yard does he sell it to clear 20 per cent. ?

52. If cloth, when sold at 14*s.* 3*d.* per yard, realizes a profit of 14 per cent., at what price per yard should it be sold to clear 20 per cent. ?

53. By selling corn at £14. 17*s.* a load, $17\frac{1}{2}$ per cent. was lost: what is it sold for, to clear $12\frac{1}{2}$ per cent. ?

54. By selling an article for 35 guineas I lost $7\frac{1}{2}$ per cent.: what should I have sold it for to clear $12\frac{1}{2}$ per cent. ?

55. Bought 40 gallons of cider at 3*s.* a gallon; but six gallons of it being lost, at what rate per gallon must I sell the remainder to gain 10 per cent. ?

BARTER.

1. How many yards of cloth, at 23*s.* 4*d.* a yard, are worth 97½ cwt. of sugar at 9¾*d.* per pound?
2. How many dozens of wine, at 40*s.* per dozen, are worth 27 yards of cloth at 32*s.* per yard?
3. How many yards of calico, at 10¼*d.* per yard, are worth 1000 yards of canvas at 9½*d.* a yard?
4. How many reams of paper, at 2*s.* 9½*d.* a ream, are worth 37 pieces of cloth at £1. 12*s.* 4*d.* a piece?
5. How much snuff, at 4*s.* 6*d.* a pound, must be given for 2 cwt. 3 qrs. of tobacco at £6. per cwt.?
6. How much beef, at 10*s.* 8*d.* per stone of 16 lbs., is worth 26 yards of linen at 2*s.* 7*d.* per yard?
7. What is cloth a yard, of which I received 140 yards for 84 yards at 15*s.* a yard?
8. What is cloth a yard, of which I received 936 yards for 156 yards at 16*s.* 10*d.* a yard?
9. What is sugar a pound, of which I receive 14 cwt. 18¾lb. for 17 cwt. of tobacco at £3. 10*s.* per cwt.?
10. What is cloth a yard, of which I receive 16 yds. $2\frac{6}{19}$qrs. for 3 cwt. 3 qrs. of sugar at £3. 4s. per cwt.?
11. How much cheese, at £1. 1*s.* 6*d.* per cwt., together with £17 in cash, must A give B for 16 pieces of cloth at £3. 15*s.* a piece?
12. How many quarters of beans at 25*s.* 9*d.* per quarter, with 8 qrs. of barley at 26*s.* 3*d.* per quarter, must A give B for 12 qrs. of wheat at 62*s.* 6*d.* per quarter?
13. How many yards of linen at 2*s.* 3*d.* a yard, together with 24 silk handkerchiefs at 5*s.* 6*d.* each, and 36 yards of cloth at 25*s.* 6*d.* a yard, must A give B for 3685 lbs. of cotton wool at 10¼*d.* per pound?

14. How much cheese, at 30*s.* per cwt., must A give B for £20 in cash, and 44 cwt. 16 lbs. of raisins at 5*d.* per pound?
15. How many gallons of rum at 16*s.* a gallon, together with 118 gallons at 18*s.* a gallon, must A give B for £6. 12*s.* 2½*d.* in cash, and 13 cwt. 1 qr. 11 lbs. of cotton wool at 2*s.* 6½*d.* per pound?
16. If A charges B in barter 10*s.* a yard for cloth which he sells at 8*s.* 4*d.* per yard ready money, what must B charge A per pound for hops which he sells at 20*d.* per pound ready money?
17. If A charges B in barter 31*s.* 6*d.* per dozen for wine which he sells at 30*s.* a doz. ready money, what must B charge A per cwt. for flax which he sells at 80*s.* per cwt. ready money?
18. In the last question, how much flax will A receive for 56 dozens of wine?
19. If A charges B in barter 36*s.* a dozen for wine which he sells at 31*s.* 6*d.* per dozen ready money, what must B charge A per gallon for brandy which he sells at 25*s.* a gallon ready money?
20. A has 200 yards of linen worth 2*s.* 6*d.* a yard, which he barters with B at 2*s.* 7½*d.*, taking in return linen at 3*s.* 9*d.* per yard, which B commonly sold at 3*s.* 4*d.* ready money: which of them has the best bargain? —and how much linen did A receive?
21. A has flax worth £3. 16*s.* per cwt., which he offers to barter with B for sheeting worth 7½*d.* per yard. B agrees to take flax in part, but rates his sheeting at 8¼*d.* per yard, and insists on having ¼ of that value in cash. What must A charge his flax per cwt. to be on equal terms with B?

PARTNERSHIP.

1. A and B purchase a house for £217, of which A pays £93, and B the rest. They sell it for £252. What should each receive?
2. A and B bought a ship for £136, of which A paid £85, and B the rest. They sold it for £150. What should each receive?
3. A and B join in a speculation by which they gain £160: what should each receive?—A having advanced £321 and B £749.
4. A and B join in a speculation by which they lose £1000: what loss will each sustain?—A having advanced the sum of £2450 and B £3500.
5. A and B rent a field for £20. A puts in 115 sheep and B 138 for the same time: what should each pay?
6. A, B, and C join in a speculation by which they gain £165: what should each receive?—A having advanced £84, B £78. 15*s.*, and C £126.
7. A, B, and C join in a speculation by which they gain £91: what should each receive?—A having advanced £161, B £138; and C £119. 12*s.*
8. A ship's cargo was 350 tuns of wine, of which 110 tuns belonged to A, 97 to B, and the rest to C. The sailors were compelled to throw overboard 85 tuns. What loss will each sustain?
9. A, B, and C purchase a house for £14,180, of which A paid £2127, B £8508, and C the rest. They sold it for £15,780. What will each person gain?
10. A, B, and C purchase a ship: A pays for 6 shares, B 9, and C 3. They gained £315. 14*s.* 6*d.* What should each receive?

11. A ship worth £860—of which $\frac{1}{5}$ belonged to A, $\frac{1}{4}$ to B, and the rest to C—was lost: what loss will each sustain? the insurance being to the amount of £500.
12. A and B rent a field for £25. A puts in 27 oxen, and B 180 sheep: what should each pay of the rent, supposing an ox to eat as much as 10 sheep?
13. A and B rent a field for £25. A puts in 14 horses, and B 36 oxen: what should each pay, if a horse eat as much again as an ox?
14. A and B rent a field for £18. A puts in 14 horses, and B 23 cows: what should each pay, supposing 2 horses to eat as much as 3 cows?
15. A and B rent a field for £20. A puts in 22 horses, and B 15 oxen and 180 sheep: what should each pay, supposing a horse to eat as much as 20 sheep, and half as much again as an ox?
16. A and B purchase a quantity of rum, for which A advances £110 more than B. By retailing the rum at 13*s.* 4*d.* a gallon, A cleared £91. 13*s.* 4*d.* and B £55: how much rum did they buy?
17. A and B join in a speculation by which they gain £134. 4*s.* 3*d.* A advances £270. 12*s.* 6*d.*; and B's share of the gain is £73. 6*s.* $5\frac{1}{4}d.$ What is A's share?—and what did B advance?
18. A and B rent a field for £27. A puts in 15 oxen for 10 days, and B 21 oxen for 7 days: what should each pay?
19. A and B rent a field for £82. A puts in 64 horses for 25 days, and B 56 horses for 30 days: what should each pay?
20. A and B rent a field for £36. A puts in 23 oxen for 27 days, and B 21 oxen for 39 days: what should each pay?
21. A and B join their stocks in trade. A puts in £46 for

8 months, and B £23 for 4 months. They gained £10. What should each receive?

22. A and B join their stocks in trade. A advances £50 for 4 months, and B £60 for 5 months: what is each person's share of the gain or loss?

23. A and B enter into partnership. A advances £150 for 2 years, and B £120 for $3\frac{1}{2}$ years: what is each person's share of the gain or loss?

24. A, B, and C join their stocks in trade. A advances £100 for 9 months, B £150 for 7 months, and C £80 for 10 months: what is each person's share of the gain?

25. A, B, and C join in trade. A puts in £3. 6*s.* for 2 years, B £100 for one year, and C £12 for $1\frac{1}{2}$ years. They gained £4276. 7*s.* What are the shares of A and B?

26. A, B, and C rent a field for £30. A puts in 7 oxen for 3 months, B 9 oxen for 5 months, and C 4 oxen for 12 months: what should A pay?

27. A, B, and C rent a field for 20 guineas. A puts in 25 cattle for 12 months, B 30 for 9 months, and C 45 for 7 months: what should A pay?

28. A, B, and C rent a field for £60. 10*s.* A puts in 5 cattle for $4\frac{1}{2}$ months, B 8 for 5 months, and C 9 for $6\frac{1}{2}$ months: what should A pay?

29. A and B rent a field for £20. A puts in 8 horses for 7 months, and B 52 sheep for 8 months: what should each pay, supposing 1 horse = 20 sheep?

30. A and B rent a field for £20. A puts in 4 horses for 7 months, and B 26 oxen for 8 months: what should each pay, if 1 horse = 2 oxen?

31. A and B rent a field for £20. A puts in 18 horses for 7 months, and B 11 cows and 57 sheep for 8 months: what should each pay of the rent, supposing a horse to eat as much as 20 sheep, and half as much again as a cow?

EQUATION OF PAYMENTS.

1. If £20 be due in 9 months, and £30 in 4 months, when should the whole be paid at once?
2. If £100 be due in 9 months, and £500 in 1½ years, when should the whole be paid at once?
3. If £100 be due in 4 months, and £100 in 6 months, find the equated time of paying the whole.
4. If £200 be due now, £600 in 4 months, and £200 in 6 months, find the equated time.
5. If £100 be due in 2 months, £80 in 5 months, and £60 in 7 months, find the equated time.
6. If £100 be due in 2 months, £200 in 4 months, £300 in 6 months, and £100 in 12 months, when should the whole be paid at once?
7. If £100 be due in 4 months, £200 in 5 months, and £600 in 12 months, find the equated time.
8. If £200 be due in 40 days, £70 in 60 days, and £200 in 105 days, find the equated time.
9. If £200 be due in 6 months, £350 in 11 months, £700 in 13 months, and £730 in 16 months, when should the whole be paid at once?
10. A owes B £240, to be paid in 6 months; but in 1½ months he pays him £60, and in 4½ months £80 more: when should he pay the rest?
11. If £52. 7*s*. 6*d*. be due in 4½ months, £80. 10*s*. in 3½ months, and £76. 2*s*. 6*d*. in 5 months, when should the whole be paid at once?
12. If £66. 13*s*. 4*d*. be due in 3 months, £33. 6*s*. 8*d*. in 4 months, £100 in 5 months, and £66. 13*s*. 4*d*. in 6 months, when should the whole be paid at once?

13. A debt of £1000 is to be paid as follows: viz., $\frac{1}{2}$ at 8 months, $\frac{1}{3}$ at 12 months, and the rest in 18 months: when should the whole be paid at once?
14. A debt is to be paid as follows: viz., $\frac{1}{2}$ in 3 months, $\frac{1}{7}$ in 8 months, and the rest in 15 months: when should the whole be paid at once?
15. A debt is to be paid as follows: viz., $\frac{1}{3}$ in 3 months, $\frac{1}{5}$ in 5 months, and the rest in 8 months; when should the whole be paid at once?
16. A debt of £500 is to be paid as follows: viz., $\frac{1}{5}$ in ready money, $\frac{1}{3}$ in 3 months, $\frac{1}{6}$ in 4 months, $\frac{1}{5}$ in 6 months, and the rest in 8 months; when should the whole be paid at once?
17. A debt of £50 is to be discharged by monthly payments of five pounds: when should the whole sum be paid at once?
18. A debt of £27. 10*s.* is to be discharged by monthly payments of 50*s.*: find the equated time.
19. A debt of £1000 is to be discharged by monthly payments of £50: when should the whole sum be paid at once?
20. A debt of £105. 12*s.* is to be discharged by monthly payments of £6. 12*s.*: find the equated time.
21. If £60 be due now, and £100 at the end of every month for fifteen months, when should the whole be paid at once?
22. A debt is to be discharged by paying half of it now, and $\frac{1}{10}$ of the remainder every month: when should the whole be paid at once?
23. A debt is to be discharged by paying $\frac{3}{7}$ of it now, and $\frac{1}{10}$ of the remainder every month: when should the whole be paid at once?

DECIMALS.

NOTATION AND NUMERATION.

Express in figures the following numbers:

1. One tenth.
2. One hundredth.
3. One thousandth.
4. One ten-thousandth.
5. Seven tenths.
6. Seven hundredths.
7. Seven thousandths.
8. Seven ten-thousandths.
9. Nine tenths.
10. Six hundredths.
11. Four thousandths.
12. Six ten-thousandths.
13. Five hundredths.
14. Eight tenths.
15. Three thousandths.
16. One millionth.
17. Four ten-thousandths.
18. Five thousandths.
19. Two ten-millionths.
20. Six hundred-thousandths.
21. Eleven hundredths.

22. Eleven thousandths.
23. Twenty-seven hundredths.
24. Twenty-seven thousandths.
25. Forty-nine hundredths.
26. Sixty-seven thousandths.
27. One hundred and sixty-seven thousandths.
28. Seven hundred and twelve thousandths.
29. Six hundred and two thousandths.
30. Forty-five thousandths.
31. Forty-five ten-thousandths.
32. One hundred and forty-five ten-thousandths.
33. Four hundred and fifty-one ten-thousandths.
34. One hundred and six ten-thousandths.
35. Four hundred and sixty-seven millionths.
36. One hundred and twenty-three, and nineteen hundredths.
37. Fifty-six, and eighteen thousandths.
38. Eighteen, and forty-five ten-thousandths.
39. One, and fifty-seven millionths.
40. Sixty-five, and forty-seven thousandths.

Express in words the following numbers:

1.	·7	11.	63·5	21.	340·45
2.	·07	12.	75·3	22.	27·356
3.	·007	13.	167·4	23.	273·56
4.	·06	14.	25·19	24.	2·7356
5.	·77	15.	110·11	25.	10·101
6.	·066	16.	19·57	26.	101·0101
7.	·0666	17.	71·95	27.	10·001
8.	·0606	18.	34·45	28.	7000·007
9.	·6006	19.	3·445	29.	305·00509
10.	·6606	20.	34·045	30.	1020·304056

ADDITION.

Add together the following numbers:

1. ·857 and ·67854.
2. 21·007 and 2·34651.
3. 13·79576 and ·00076.
4. 196·785, 12·0134, and 7·00006.
5. 7·634, 3·007956, and ·90058.
6. 715·2, 38·243, and 401·0405.
7. 1234·567, ·00012, 61·5, and 6·15.
8. 45·006, 734·08, ·002, and ·0001.
9. 1·534, 12·3456, 14·6204, and 28.
10. 32·108, 10·492, ·0999, and 100·0001.
11. ·0025, 200, ·074, and 523·1424.
12. 96·324, 31·476, ·2997, and 300·0003.
13. ·001, 2·0001, ·4, and 7·010101.
14. 1000, 100·1, 10·02, 1·003, and ·1045.
15. 2·468, 24·6912, 56, and 28·8408.
16. ·8037, 8·037, 80·37, 803·7, and 8037.
17. 2·34, ·034, ·005, 11·375, and 2·6.
18. 3·008, 4·8078, ·006, 1201·6, and ·8002.
19. 30·08, 48·078, ·06, 12016, and 8·002.
20. 24·68, 246·912, 560, and 288·408.
21. 123·21, 220, 1·234, ·3, and 5740.
22. 230, 7·132, 14·44, ·4113, and 522·1.
23. 4520, ·034, ·5438, ·422, and 93·44.
24. 101, ·101, 1·01, ·77, and ·0707.
25. 4, ·04, ·49, 49·049, and ·01092.
26. ·4, ·44, ·044, 173·0044, and 6.
27. 4600, ·51, ·6, ·02461, ·64, and 3·655.
28. ·0053, 56, 854·8, 65·21, and 1·6788.

SUBTRACTION.

	MINUEND.	SUBTRAHEND.
1.	·9476	·195
2.	·975	·4837
3.	·27549	·2371
4.	27·903	·0546
5.	213·5734	87·657204
6.	127·62	13·725
7.	6·5	6·0003
8.	7295·06	254·738
9.	·7053	·6729
10.	2464·21	327·07643
11.	9·567	3·078
12.	96·5	·000783
13.	73·5673	12·889
14.	385·76943	72·57
15.	27·003	7·6854
16.	3760·279	423·0076
17.	30·7265	·007598
18.	54·763	·921
19.	100·011	2·07568
20.	3·025	·003025
21.	243·21	·964213
22.	372·971	270·30041
23.	·00078	·000089
24.	87·31	6·871496
25.	1·000009	·784163
26.	462·0068	134·799
27.	900·005	89·1171
28.	·987654321	·0987654321
29.	54·006	15·3708

MULTIPLICATION AND DIVISION.

	MULTIPLY	DIVIDE	BY
1.	532·123	568·362	2
2.	·02763	·07659	3
3.	76·5405	631·526	4
4.	·075678	·021468	5
5.	5·87493	42·715	6
6.	·00457	3·21405	7
7.	7658·5	·00975	8
8.	·000556	578·56	9
9.	65·438	65·438	10
10.	·004162	·00765	10
11.	·89708	9867·94	11
12.	·006978	8373·65	12
13.	·00169	718·64	13
14.	728·495	2076·58	41
15.	·00268	8·7651	25
16.	84297·6	45·71238	210
17.	160·8	17530·2	250
18.	·815036	·50672	7030
19.	264·806	·017739	365
20.	189·6	5021·486	325
21.	·0475	1846·32	2160
22.	5·6185	12904·7	1360
23.	·0956	45·6968	956
24.	·00557	3·5158	1235
25.	·073787	54683	9076
26.	86·056	·00743	5904
27.	·000215	42·711	1238
28.	·00273	·00843	1433

	MULTIPLY	DIVIDE	BY
1.	671·42	37·5678	·2
2.	46·1254	·08289	·03
3.	5·4321	240·135	·04
4.	1·37582	·37839	·05
5.	·04712	47·6123	·06
6.	560·735	3266·9	·007
7.	1218·75	71508·7	·008
8.	55600	57856	·09
9.	179·416	4·93397	·011
10.	·09424	837·36	·012
11.	56170	187·643	5·31
12.	·0568	82232·5	3·175
13.	815036	50672	·0703
14.	·764	5·43968	85·6
15.	15000	71·864	·00013
16.	·00457	2·975984	32·56
17.	516720	101·6064	·1008
18.	·0556	56·25	·0045
19.	587493	6723	·054
20.	·0075	17000	18·75
21.	737·87	54·683	907·6
22.	·05617	·015713	·1813
23.	189600	762·151	·00325
24.	728·495	·0257	·0041
25.	·00458	325·46	·0187
26.	8·7604	·0719	27·53
27.	258360	10160·64	·0504
28.	75000	51000	·1375
29.	147·574	10·9366	453·8
30.	·1896	15243·02	·0065
31.	·028085	·0031426	·3626

REDUCTION.

CASE I.—To reduce a vulgar fraction to its equivalent decimal fraction.

1. Reduce $\frac{1}{2}$, $\frac{1}{5}$, $\frac{3}{5}$, $\frac{1}{25}$, and $\frac{2}{25}$ to their equivalent decimal fractions.
2. Reduce $\frac{1}{10}$, $\frac{1}{50}$, $\frac{1}{100}$, $\frac{3}{500}$, and $\frac{1}{125}$ to their equivalent decimal fractions.
3. Reduce $\frac{3}{4}$, $\frac{17}{20}$, $\frac{3}{40}$, $\frac{17}{125}$, and $\frac{13}{16}$ to their equivalent decimal fractions.
4. Reduce $\frac{3}{8}$, $\frac{7}{800}$, $\frac{1}{10}$, $\frac{9}{400}$, and $\frac{104}{125}$ to their equivalent decimal fractions.
5. Reduce $\frac{13}{625}$, $\frac{17}{1250}$, $\frac{13}{125}$, and $\frac{77}{125}$ to their equivalent decimal fractions.
6. Reduce $\frac{7}{640}$, $\frac{15}{256}$, and $\frac{9}{1250}$ to their equivalent decimal fractions.
7. Reduce $\frac{1}{3}$, $\frac{1}{6}$, $\frac{1}{7}$, $\frac{1}{9}$, and $\frac{1}{11}$ to their equivalent decimal fractions.
8. Reduce $\frac{1}{15}$, $\frac{5}{6}$, $\frac{7}{9}$, $\frac{6}{11}$, and $\frac{8}{9}$ to their equivalent decimal fractions.
9. Reduce $\frac{6}{15}$, $\frac{2}{75}$, $\frac{5}{36}$, $\frac{13}{999}$, and $\frac{4}{999}$ to their equivalent decimal fractions.
10. Reduce $\frac{19}{25}$, $\frac{23}{27}$, $\frac{16}{37}$, $\frac{23}{37}$, and $\frac{166}{999}$, to their equivalent decimal fractions.
11. Reduce $\frac{23}{1008}$, $\frac{17}{1375}$, $\frac{6401}{409600}$, and $\frac{41111}{333000}$ to their equivalent decimal fractions.
12. Reduce $\frac{162}{999}$, $\frac{62}{999}$, $\frac{7}{999}$, and $\frac{3}{125}$ to their equivalent decimal fractions.
13. Reduce $\frac{1}{625}$, $\frac{19}{13}$, and $\frac{1256}{1000}$ to their equivalent decimal fractions.
14. Reduce $\frac{46}{9999}$, $\frac{62}{333}$, and $\frac{1}{81}$ to their equivalent decimal fractions.

CASE II.—To reduce a decimal fraction to its equivalent vulgar fraction.

1. Reduce ·2, ·4, ·5, ·6, and ·8 to their equivalent vulgar fractions.
2. Reduce ·04, ·05, ·06, and ·08 to their equivalent vulgar fractions.
3. Reduce ·004, ·005, ·006, and ·008 to their equivalent vulgar fractions.
4. Reduce ·12, ·24, ·45, and ·88 to their equivalent vulgar fractions.
5. Reduce ·75, ·85, ·075, and ·136 to their equivalent vulgar fractions.
6. Reduce ·848, ·375, ·625, and ·016 to their equivalent vulgar fractions.
7. Reduce ·0064, ·072, ·0625, and ·0208 to their equivalent vulgar fractions.
8. Reduce ·0225, ·0136, ·00875, and ·8125 to their equivalent vulgar fractions.
9. Reduce ·01875, ·0272, and ·015625 to their equivalent vulgar fractions.
10. Reduce ·13125, ·0816, and ·078125 to their equivalent vulgar fractions.
11. Reduce ·00272, ·01696, and ·09375 to their equivalent vulgar fractions.
12. Reduce ·008125, ·071575, and ·0075264 to their equivalent vulgar fractions.
13. Reduce ·1015625, ·6015625, and ·0109375 to their equivalent vulgar fractions.
14. Reduce ·05859375 and ·006640625 to their equivalent vulgar fractions.
15. Reduce ·0146484375 and ·0005859375 to their equivalent vulgar fractions.

CASE III.—To reduce one quantity to the decimal of another.

1. Reduce 3*d*., 6*d*., 9*d*., and 10*d*. to decimals of 1*s*.
2. Reduce 5*s*., 7*s*., 8*s*., 14*s*., and 19*s*. to decimals of £1.
3. Reduce 6, 3, 5, 7, and 12 oz. to decimals of a lb. Avoir.
4. Reduce 660, 800, and 1595 yds. to decimals of a mile.
5. Reduce 3*d*., 6*d*., 9*d*., 4*d*., and 5*d*. to decimals of £1.
6. Reduce 3, 8, 9, 10, and 11 inches to decimals of a yard.
7. Reduce 7, 8, 20, and 21 lbs. to decimals of a cwt.
8. Reduce 8, 9, 30, and 40 minutes to decimals of a day.
9. Reduce 3, 4, and 7 drs. to decimals of a pound Avoir.
10. Reduce 7*s*. 4½*d*., 3*s*. 11¼*d*., 13*s*. 4½*d*., and 12*s*. 6¾*d*. to decimals of £1.
11. Reduce 3*s*. 3¾*d*., 8*s*. 7¼*d*., 15*s*. 9¾*d*., and 16*s*. 10½*d*. to decimals of £1.
12. Reduce 11 oz. 17 dwts., 8 oz. 11 dwts., and 7 oz. 4 dwts. 18 grs. to decimals of a lb.
13. Reduce 3 dys. 1 hr. 30 min., and 4 dys. 1 hr. 7½ min. to decimals of a week.
14. Reduce 1 qr. 14 lbs., 3 qrs. 21 lbs., and 3 qrs. 25 lbs. 6 oz. to decimals of a cwt.
15. Reduce 2 qrs. 9 lbs. 10 oz., and 5 lbs. 12 oz. 6½ drs. to decimals of a cwt.
16. Reduce 3*s*. 4*d*. to the decimal of a crown; and 17*s*. 6*d*. to the decimal of £1. 2*s*. 6*d*.
17. Reduce 3 qrs. 14 lbs. to the decimal of 1 cwt. 1 qr.; and 3 cwt. 84 lbs. to the decimal of 1 cwt. 1 qr. 14 lbs.
18. Reduce 2*s*. 7½*d*. to the decimal of 2*s*. 6*d*.; and 6*s*. 0½*d*. to the decimal of 6*s*. 7¾*d*.
19. Reduce 19⅓ guineas to the decimal of £20; and 10⅓ square inches to the decimal of a square yard.
20. Reduce £1. 13*s*. to the decimal of £1. 4*s*.; and ⅓ 3*s*. 1½*d*. to the decimal of 2*s*. 1*d*.

21. Reduce £19. 17*s.* 2¼*d.* to the decimal of £2. 10*s.*; and 3 qrs. to the decimal of 5 Fl. ells 2½ qrs.
22. Reduce 14⅓ hrs. to the decimal of 2 dys. 20 min.; and 19 dys. 12 hrs. to the decimal of 7 dys. 7 hrs. 30 min.
23. Reduce £4 to the decimal of 1*s.* 10½*d.*; and 1*s.* 10½*d.* to the decimal of £4.
24. Reduce 3 rds. 23 pls. to the decimal of 4 acrs. 3 rds. 32 pls.; and 2 mls. 80 yds. to the decimal of 1 lg. 2 mls. 200 yds.
25. Reduce 16 E. ells to the decimal of a Fl. ell; and 75 Fl. ells to E. ells; and 64 E. ells to yards.
26. Reduce 11 lbs. 8 oz. to the decimal of 52 oz. 10 dwts.; and 3 oz. 5 dwts. 13 grs. to the decimal of 4 oz. 7 dwts. 12 grs.
27. Reduce 3 lbs. 8 oz. 12 drs. to the decimal of 2 qrs. 7 lbs. 12 oz.; and 17 tons 5 cwt. to the decimal of 26 tons 9 cwt.
28. Reduce 5 yds. 2 qrs. 2 nls. to the decimal of 7 E. ells 2 qrs.; and 7 E. ells 1 qr. to the decimal of 39 Fl. ells.
29. Reduce 1 yd. 1 ft. 3 in. to the decimal of 3 yds. 2 ft. 4 in.; and 5½ pls. to the decimal of 13¾ yds.
30. Reduce 16·75 guineas to the decimal of 1·5 crown; and ·3 of 10*s.* 6*d.* to the decimal of 8*s.* 4*d.*
31. Reduce 17 sq. ft. 18 in. to the decimal of 1 sq. yd. 5 ft.; and ·35 of £1 to the decimal of a guinea.
32. Reduce 5 gal. 2 qts. 1 pt. to the decimal of 8 qrs; and 7 bush. to the decimal of 1 qr. 2 bush. 2 pks.

CASE IV.—To find the value of a decimal.

1. Find the values of £·16875, £·36875, £·66875, and £·628125.
2. Find the values of £·790625, and ·9875 of a pound Troy.
3. Find the values of ·375 of a cwt., and ·953125 of a mile.
4. Find the values of ·09375 of a cwt., and ·1875 of a guinea.
5. Find the values of ·3575 of an hour, and ·746225 of a mile.
6. Find the values of ·4375 of a week, ·5625 of a guinea, and ·105 of £5.
7. Find the values of ·578125 of a week, and ·34375 of 28 days.
8. Find the values of ·00625 of a day, ·015625 of a cwt. and ·7125 of a lb. Troy.
9. Find the values of ·655 of a day, ·03125 of a quarter, and ·00828125 of £20.
10. Find the values of £·5675, ·203125 of a quarter, and ·1875 of 5 guineas.
11. Find the values of £·00375, ·07 of £2. 10*s*., and ·00439453125 of a cwt.
12. Find the values of ·079 of a crown, and ·732 of a lb. Troy.
13. Find the values of ·007 of a ton, and ·936 of a pound Avoirdupois.
14. Find the values of ·5859375 of a cwt., and ·785 of a year of 365¼ days.
15. Find the values of ·0515625 of a cwt., and ·0474609375 of £10. 13*s*. 4*d*.
16. Find the value of ·225 of 13*s*. 4*d*., and ·2 of 15*s*. 9*d*.

17. Find the value of $\frac{4}{9}$ of ·625 of 8*s.* 3*d.*, and $7\frac{1}{2}$ of $\dot{2}\dot{2}$ crowns.
18. Find the value of 13·25 of 4 tons 15 cwt., and $\frac{1}{3}$ of ·6$\dot{3}$ of 2 lbs. 4 oz. Avoirdupois.
19. Find the value of £·5 + ·25 guinea + 3·25 crowns + ·625 shilling.
20. Find the value of £·125 − ·$\dot{3}$ moidore + 16·375 crowns − ·83 of 1*s.* 6*d.*
21. Find the value of 117·5*s.* + 16·25*d.* − 19·45 of 1*s.* 8*d.* + $\frac{1}{3}$ of $\frac{1}{3}$ of ·1$\dot{6}$ of 7·5*s.*
22. Find the value of $2\frac{1}{4}$ of ·1$\dot{6}$ mile, and ·75 of ·$\dot{7}\dot{5}$ of 1 ml. 154 yds.
23. Find the value of $\frac{2}{3}$ of $\frac{1}{4}$ of 4·4$\dot{9}$ ac., and from 2 ac. take ·625 rds.
24. Find the value of £19·5 + 9·5 guineas − 3·7 crowns; and take 1·2*s.* from £2·635.
25. Find the value of 1·8 of £1. 13*s.* 4*d.*, and ·16 of 3·75 lbs. Troy.
26. Find the value of ·1 of 1 lb. Troy, $\frac{1}{11}$ of 5·4 furlongs, and ·0625 of a quarter.
27. Find the value of 1·19$\dot{4}$ of $5\frac{1}{3}$ days, and $\frac{1}{15}$ of ·4$\dot{3}$ of 12·5 minutes.
28. Find the value of 1·5 qrs. + 3·75 bush. − 125 pks. + 15·75 of ·08 of 2 qrs. 2 bush.
29. Find the value of 3·75 yds. + 4·9 Eng. ells − ·$\dot{7}\dot{5}$ of 11 Fl. ells + 2 Fr. ells 3·125 qrs.

CIRCULATING DECIMALS.

REDUCTION.

1. Reduce $\cdot\dot{1}$, $\cdot\dot{2}$, $\cdot\dot{3}$, $\cdot\dot{4}$, $\cdot\dot{5}$, and $\cdot\dot{6}$ to vulgar fractions.
2. Reduce $\cdot\dot{7}$, $\cdot\dot{8}$, $\cdot\dot{9}$, $\cdot\dot{1}\dot{0}$, $\cdot\dot{1}\dot{1}$, and $\cdot\dot{1}\dot{2}$ to vulgar fractions.
3. Reduce $\cdot39_{39}$, $\cdot45_{45}$, $\cdot05_{05}$, $\cdot63_{63}$, and $\cdot72_{72}$ to vulgar fractions.
4. Reduce $\cdot09_{09}$, $\cdot90_{90}$, $\cdot84_{84}$, $\cdot93_{93}$, and 96_{96} to vulgar fractions.
5. Reduce $\cdot\dot{1}5\dot{6}$, $\cdot\dot{1}4\dot{8}$, $\cdot\dot{2}9\dot{6}$, and $\cdot3\dot{7}\dot{0}$ to vulgar fractions.
6. Reduce $\cdot387_{387}$, $\cdot974_{974}$, $\cdot027_{027}$, and $\cdot108_{108}$ to vulgar fractions.
7. Reduce $\cdot0990_{0990}$, $\cdot14634_{14634}$, and $\cdot43902_{43902}$ to vulgar fractions.
8. Reduce $\cdot\dot{4}\dot{7}$, $\cdot5\dot{4}$, $\cdot\dot{8}\dot{5}$, $\cdot5\dot{6}$, $\cdot0\dot{7}$, and $\cdot\dot{5}\dot{7}$ to vulgar fractions.
9. Reduce $\cdot8_{64}$, $\cdot5_{76}$, $\cdot4_{75}$, $\cdot0_{76}$, and 5_{30} to vulgar fractions.
10. Reduce $\cdot34_{7}$, $\cdot13_{8}$, $\cdot42_{4}$, $\cdot45_{4}$, and $\cdot41_{6}$ to vulgar fractions.
11. Reduce $\cdot36\dot{2}\dot{1}$, $\cdot24\dot{5}\dot{7}$, $\cdot34\dot{0}\dot{9}$, and $34\dot{5}\dot{6}$ to vulgar fractions.
12. Reduce $\cdot208_{3}$, $\cdot008_{3}$, $\cdot005_{6}$, and $\cdot51_{87}$ to vulgar fractions.
13. Reduce $\cdot079_{54}$, $\cdot24_{15}$, and $\cdot129_{31}$ to vulgar fractions.
14. Reduce $\cdot4754\dot{3}$, $\cdot25462\dot{9}$, and $\cdot762195\dot{1}$ to vulgar fractions.

ADDITION AND SUBTRACTION.

Find the sum and difference of A and B:—

	A.	B.
1.	$517{\cdot}63_4$	$471{\cdot}675_9$
2.	$213{\cdot}567_8$	$485{\cdot}72_4$
3.	$451{\cdot}26_8$	$37{\cdot}45_7$
4.	$36{\cdot}742_5$	$819{\cdot}5_6$
5.	$6470{\cdot}123_5$	$549{\cdot}67_8$
6.	$872{\cdot}45_6$	$367{\cdot}237_5$
7.	$367{\cdot}541_7$	$5678{\cdot}458_9$
8.	$22{\cdot}0475_8$	$584{\cdot}72_6$
9.	$56047{\cdot}61_4$	$327{\cdot}38_5$
10.	$5047{\cdot}610_9$	$517{\cdot}8467_5$
11.	$56{\cdot}7238_6$	$7{\cdot}415_{23}$
12.	$720{\cdot}15_{62}$	$435{\cdot}73_4$
13.	$58{\cdot}741_{26}$	$135{\cdot}278_4$
14.	$816{\cdot}750_{63}$	$2547{\cdot}21_5$
15.	$421{\cdot}7_{65}$	$2571{\cdot}80_{61}$
16.	$621{\cdot}57_{486}$	$218{\cdot}847_9$
17.	$841{\cdot}6_{274}$	$58{\cdot}476_8$
18.	$127{\cdot}58_{042}$	$756{\cdot}2_{486}$
19.	$24{\cdot}56_{7893}$	$45{\cdot}357_{24}$
20.	$\cdot6458_{458}$	$\cdot7652_{52}$
21.	$51{\cdot}62_{7413}$	$728{\cdot}75_{23}$
22.	$276{\cdot}43_{78}$	$304{\cdot}1_{2967}$
23.	$4{\cdot}71_{625625}$	$\cdot612_{471512}$
24.	$5{\cdot}72_{344003}$	$42{\cdot}54_{54}$
25.	$\cdot415_{637415}$	$2{\cdot}01_{92}$
26.	$65{\cdot}4_{28744}$	$6{\cdot}54_{75630}$
27.	$\cdot064_{712064}$	$\cdot0064_{764}$

Add together the following numbers:—

1. $8{\cdot}5_5$, $7{\cdot}4_5$, and $6{\cdot}34_2$.
2. $4{\cdot}37_4$, $\cdot37_5$, and $156{\cdot}05984$.
3. $3{\cdot}00_4$, $5{\cdot}4_4$, and $18{\cdot}0_4$.
4. $16{\cdot}2_7$, $9{\cdot}6_6$, and $21{\cdot}0_3$.
5. $45{\cdot}68_3$, $27{\cdot}7_5$, and $162{\cdot}56_1$.
6. $9{\cdot}9_9$, $8{\cdot}0_9$, and $6{\cdot}00_9$.
7. $125{\cdot}3_3$, $6{\cdot}2_2$, and $18{\cdot}4_4$.
8. $25{\cdot}2_2$, $104{\cdot}6_6$, and $63{\cdot}7_7$.
9. $105{\cdot}7_5$, $22{\cdot}58_6$, and $14{\cdot}058_6$.
10. $456{\cdot}00_6$, $7{\cdot}906_5$. and $\cdot0_9$.
11. $\cdot50_4$, $10{\cdot}0_5$, $\cdot000_3$, and $100{\cdot}1_6$.
12. $26{\cdot}3_4$, $\cdot00_3$, $6{\cdot}2_2$, and $\cdot12345$.
13. $\cdot381_3$, $\cdot4_2$, $\cdot521_6$, and $\cdot9472_4$.
14. $45{\cdot}7958_3$, $3{\cdot}6_6$, $170{\cdot}8_3$, and $16{\cdot}645$.
15. $1{\cdot}15188_3$, $13{\cdot}6_6$, $4{\cdot}3_3$, and $29{\cdot}62_7$.
16. $179{\cdot}88_3$, $93{\cdot}5$, $25{\cdot}88958_3$, and $15{\cdot}7_6$.
17. $71{\cdot}56_{56}$, $24{\cdot}7_{23}$, and $102{\cdot}4_4$.
18. $2{\cdot}6_6$, $18{\cdot}45_{45}$, $\cdot0_3$, and $6{\cdot}0_4$.
19. $3049{\cdot}1_1$, $82{\cdot}516_{516}$, and $144{\cdot}372_{372}$.
20. $18{\cdot}3_3$, $57{\cdot}5_5$, and $156{\cdot}426_{426}$.
21. $\cdot6_6$, $\cdot296_{296}$, $\cdot3_3$, and $\cdot96_{345}$.
22. $7{\cdot}05$, $\cdot63_{63}$, $\cdot185_{185}$, and $\cdot857_{142857}$.
23. $\cdot96_{345}$, $\cdot3_3$, $\cdot135_{135}$, and $7{\cdot}3_3$.
24. $4{\cdot}37_4$, $\cdot37_5$, $\cdot142_{857142}$, and $2{\cdot}6_6$.
25. 135_{135}, $\cdot3_3$, $\cdot36_{36}$, and $175{\cdot}_{09}$.
26. $3{\cdot}8_3$, $4{\cdot}72_{72}$, and $1{\cdot}142857_{142857}$.
27. $67{\cdot}345_{345}$, $8{\cdot}621_{621}$, $5{\cdot}24_{24}$, and $1{\cdot}8_8$.
28. $2{\cdot}3_{93}$, $\cdot0_{84}$, $1{\cdot}279_{279}$, and $\cdot76_{923076}$.
29. $\cdot80_{80}$, $17{\cdot}4_7$, $9{\cdot}651_{651}$, and $67{\cdot}3_{45}$.
30. $7{\cdot}6_6$, $9{\cdot}45_{45}$, $7{\cdot}5_4$ and $\cdot285_{714285}$.

MULTIPLICATION AND DIVISION.

	MULTIPLY	DIVIDE	BY
1.	$71{\cdot}58_{4}$	$71{\cdot}58_{4}$	2
2.	$52{\cdot}148_{5}$	$21{\cdot}48_{5}$	3
3.	$716{\cdot}5_{7}$	$2716{\cdot}5_{7}$	4
4.	$257{\cdot}6_{27}$	$\cdot 7231_{7}$	5
5.	$40{\cdot}198_{3}$	$518{\cdot}6_{42}$	6
6.	$358{\cdot}6_{54}$	$450{\cdot}27_{1}$	7
7.	$16{\cdot}72_{5}$	$149{\cdot}3_{97}$	8
8.	$590{\cdot}67_{5}$	$555{\cdot}5_{5}$	9
9.	$65{\cdot}4_{374}$	$57{\cdot}1_{861}$	10
10.	$98{\cdot}3_{029}$	$91{\cdot}33_{2}$	11
11.	$47{\cdot}96_{3}$	$723{\cdot}19_{7}$	12
12.	$54{\cdot}21_{4}$	$2114{\cdot}36_{3}$	13
13.	$542{\cdot}1_{4}$	$4987{\cdot}72_{3}$	23
14.	$456{\cdot}0_{72}$	$36{\cdot}51_{2}$	51
15.	$563{\cdot}17_{2}$	$4667{\cdot}7_{81}$	540
16.	$301{\cdot}5_{68}$	$4252{\cdot}11_{84}$	47
17.	$27{\cdot}165_{3}$	$146{\cdot}80_{2}$	930
18.	$27{\cdot}3_{453}$	$377{\cdot}3_{657}$	46
19.	$54{\cdot}21_{4}$	$34914{\cdot}10_{2}$	161
20.	$56{\cdot}317_{2}$	$466{\cdot}77_{81}$	162
21.	$271{\cdot}65_{3}$	$587{\cdot}20_{3}$	3·72
22.	$456{\cdot}0_{72}$	$109{\cdot}53_{6}$	1·53
23.	$27{\cdot}3_{453}$	$2641{\cdot}5_{603}$	322
24.	$456{\cdot}0_{72}$	$2555{\cdot}8_{5}$	·0357
25.	$301{\cdot}5_{68}$	$42521{\cdot}1_{84}$	·141
26.	$46{\cdot}1_{073}$	$42{\cdot}03_{71}$	461
27.	$27{\cdot}3_{453}$	$7547{\cdot}3_{153}$	·0138
28.	$461{\cdot}0_{730}$	$12{\cdot}611_{15}$	138·3

MISCELLANEOUS EXAMPLES IN DECIMALS.

1. Multiply ·0049 by ·063.
2. Divide ·000625 by ·025.
3. Divide ·025 by ·000625.
4. Find a fourth proportional to 8, 5, and 12·8.
5. Find a fourth proportional to ·0004, 1·4, and ·02.
6. Find a fourth proportional to ·0014, 1·4, and ·02.
7. Find a fourth proportional to 2·7, ·045, and ·78.
8. Find a fourth proportional to ·051, ·017, and ·153.
9. Find a fourth proportional to ·45, ·8, and 3·67.
10. Add together $\frac{5}{8}$, $\frac{7}{16}$, $\frac{3}{4}$, ·09375, and 2·46.
11. Add together $\frac{3}{8}$, $\frac{13}{128}$, $\frac{9363}{40000}$, and $\frac{5881}{78125}$.
12. Add together $\frac{21}{25}$, $\frac{170}{125}$, $\frac{15}{128}$, and $\frac{13}{160}$.
13. Add together $\frac{1}{16}$, $\frac{9}{400}$, $\frac{13}{625}$, $\frac{17}{1250}$, and $\frac{106}{125}$.
14. Find the value of $\frac{5}{6}+\frac{51}{65}+\frac{4}{91}+\frac{5}{11}+\frac{44}{45}$ to 5 places.
15. Find the value of $\frac{1}{2}-\frac{1}{3}+\frac{1}{6}-\frac{1}{15}+\frac{1}{42}-\frac{1}{35}$ to 5 places.
16. Multiply $\frac{2\cdot004}{\cdot167}$ by ·84375.
17. Divide ·420 by $\frac{5\cdot04}{\cdot012}$.
18. Reduce 2 qrs. 3½ nls. to the decimal of an Eng. ell.
19. Reduce 5*s.* to the decimal of 13*s.* 4*d.*
20. Reduce 11 guin. 9*s.* 4½*d.* to the decimal of £1.
21. Reduce 19*s.* 8½*d.* to the decimal of 5 guineas.
22. Reduce ⅔ of a guinea to the decimal of £2.
23. Reduce £35·091 to the decimal of a guinea.
24. Reduce ·16212 of a crown to the decimal of a guinea.
25. Find the value of ·3125 of a guinea.
26. Subtract $3\frac{3}{7}$ guineas from £4·09375.

27. Subtract ·6495 guinea from £·8735.
28. Add together ·5*s*., ·7 crown, and £·125.
29. Add together £·375, ·5625 cr., and ·875*s*.
30. Add together £2·6875, £1$\frac{7}{12}$, 2$\frac{5}{9}$ guin., and 14·625*s*.
31. Which is greatest, ·0625 of a pound, ·125 of 7*s*., or ·04 of a moidore?
32. From $\frac{3}{5}$ of a guinea take $\frac{3}{4}$ of 7*s*. 6*d*., and reduce the result to the decimal of a moidore.
33. What cost 37·625 cwt. at £7·5375 per cwt.?
34. What is the value of 83·71875 quarters of corn, at £1. 7*s*. 6*d*. per quarter?
35. A owes B £913·35, and agrees to pay him 13·5*s*. in the £: how much will B receive?
36. How many French metres, each equal to 39·371 English inches, are there in 495 English yards?
37. How many French metres, each 39·371 in., are there in 3 mls. 5 fur. 110 yds.?
38. If 14·8 Eng. ells cost £2·3125, find the value of 59·625 yds.
39. If the price of 1 lb. of sugar be ·5625 of 2*s*., what is the value of 75 cwt.?
40. How much Flemish money is equivalent to £98. 8*s*. 9*d*. English?—12·2 florins Flemish being equal to £1.
41. Reduce ·916 to its equivalent vulgar fraction.
42. Find the exact value of $\frac{2}{3}+\frac{5}{6}+\frac{7}{8}+\frac{3}{4}+\frac{1}{2}+\frac{7}{12}$.
43. Find the exact value of $\frac{1}{2}+\frac{1}{6}+\frac{1}{12}+\frac{1}{30}+\frac{1}{30}+\frac{1}{42}+\frac{1}{56}$.
44. Find the exact value of $\frac{5}{6}+\frac{1}{4}+\frac{7}{60}+\frac{1}{12}+\frac{8}{70}+\frac{5}{168}+\frac{11}{1804}$.
45. Find the exact value of $\frac{2}{3}+\frac{7}{18}+\frac{7}{36}+\frac{3}{140}+\frac{3}{1800}$.
46. Multiply $\cdot 96_{345}$ by $\cdot 3_{3}$.
47. Divide $\cdot 96_{345}$ by $\cdot 3_{3}$.
48. Multiply 7·7$\dot{2}$ by ·2$\dot{9}\dot{7}$.
49. Divide ·0$\dot{4}$ by ·$\dot{7}69230\dot{}$.
50. Divide 3·26404$\dot{}$ by 1·806$\dot{}$.

51. Reduce 7*s*. 11½*d*. to the decimal of £1.
52. Reduce 8*s*. 7¼*d*. to the decimal of a guinea.
53. Reduce 2 qrs. 3⅛ nls. to the decimal of an English ell.
54. Find the value of ·16 of £1.
55. Find the value of ·2$\dot{3}$ of £1.
56. Find the value of ·1$\dot{4}$ of £1.
57. Find the value of ·0$\dot{1}\dot{9}$ of a cwt.
58. Reduce 3 qrs. 3 lbs. 1 oz. 12⅝ drs. to the decimal of a cwt.
59. What is the difference between £·23 and £·2$\dot{3}$?
60. What is the difference between ⅔ of a ton and 7·8$\dot{3}$ of a cwt.?
61. Reduce 9 oz. 2⅞ drs. to the decimal of 16 oz.
62. Find the value of ·97291$\dot{6}$ of £1.
63. Find the value of ·089285$\dot{7}\dot{1}\dot{4}$ of 7*s*.
64. Find the value of ·013$\dot{8}$ of 3·5 moidores.
65. Find the value of £·634375 + ·025 of 25*s*. + ·31$\dot{6}$ of 30*s*.
66. Find the value of ·75 of 6*s*. 8*d*. − 1·84375 of 4*s*. + 3·979$\dot{6}$ of 2*s*.
67. Express ⅜ of a crown + ¼ of a shilling, as a decimal of 7*s*.
68. From ⅔ of a guinea take ¾ of 7*s*. 6*d*., and reduce the result to the decimal of a moidore.
69. Find the value of 2·8680$\dot{5}$ of 3*s*. + ·8$\dot{3}$ of 4*s*. − 1·8 of 5*s*.
70. Find the greatest common measure of 21·25 and 22·95.
71. Find a 4th proportional to 1, 2·2$\dot{2}$, and ·3$\dot{3}$.
72. Find the value of 2011·8$\dot{3}$ yds. of calico at 10½*d*. per yd.
73. Find the value of 2468·375 yds. of cloth at 2*s*. 3½*d*. per yd.
74. Find the value of 3415·8$\dot{3}$ yds. of cloth at 1*s*. 8*d*. per yd.
75. What is the quarter's rent of 182·$\dot{3}$ acres of land at £4·65 per annum per acre?
76. The price of ·0625 lbs. of coffee is ·458$\dot{3}$*s*., what is the value of ·075 of a ton?
77. What is the purchase of £816·6 bank annuities, at 89·375 per cent.?

SQUARE ROOT.

	NUMBER.		NUMBER.
1.	55225	30.	127828
2.	59049	31.	24932
3.	98596	32.	170000
4.	65025	33.	12504
5.	80089	34.	487000
6.	93025	35.	4870000
7.	34969	36.	75600
8.	94249	37.	534534·4
9.	89401	38.	53453·44
10.	403225	39.	1548·124
11.	321489	40.	23614·4689
12.	164836	41.	29·41275
13.	444889	42.	8·271376
14.	253009	43.	·55995289
15.	889249	44.	·8271376
16.	501264	45.	·68492176
17.	644809	46.	·1573751
18.	4562496	47.	·00157375
19.	5527201	48.	·0157375
20.	3069504	49.	·08271376
21.	9205156	50.	·0157375
22.	9998244	51.	·01874161
23.	9461776	52.	·002701
24.	2913849	53.	·00001844
25.	5326864	54.	·0000485
26.	79263409	55.	·0008271376
27.	236144689	56.	·000486057
28.	944578756	57.	·0000018225
29.	998876025	58.	·0002067844

CUBE ROOT.

	NUMBER.		NUMBER.
1.	13824	30.	30625
2.	10648	31.	28250
3.	74088	32.	437625
4.	140608	33.	12000
5.	157464	34.	102875
6.	85184	35.	382·7
7.	15625	36.	47837·5
8.	262144	37.	937·5
9.	17576	38.	93·75
10.	50653	39.	3531·25
11.	357911	40.	941·25
12.	274625	41.	94·125
13.	175616	42.	30·625
14.	830584	43.	102·875
15.	13997521	44.	17·576
16.	9528128	45.	18609·625
17.	11089567	46.	47·8375
18.	4492125	47.	11·71875
19.	41063625	48.	48·627125
20.	8869743	49.	12·859375
21.	29218112	50.	629·422793
22.	66430125	51.	·102875
23.	131096512	52.	·38270
24.	218167208	53.	·9412500
25.	379503424	54.	·09375
26.	860085351	55.	·017576
27.	627222016	56.	·0071875
28.	506261573	57.	·00094125
29.	517781627	58.	·00009375

MISCELLANEOUS QUESTIONS.

1. If a servant's wages be £25. 15*s.* for 12 months, what should he receive for 7 months?
2. What must a house, assessed at £65 per annum, pay towards a poor-rate of 1*s.* 3*d.* in the pound?
3. What is the tax on £1250, at 2*s.* 3½*d.* in the pound?
4. Find the value of a chest of tea weighing 93 lbs. 6 oz., at the rate of 5*s.* 4*d.* per lb.
5. A owes B for 17 cwt. 2 qrs. of sugar, at £3. 10*s.* per cwt.; and B owes A for 14 cwt. 3 qrs. of cheese, at £4. 5*s.* per cwt.: in whose favour is the balance?
6. What is the interest on £75. 15*s.* from March 17th to August 10th, at the rate of 5 per cent. per annum?
7. What discount must be allowed on a bill of £65, due in two months hence, at 5 per cent.
8. A bill of exchange for £150, due on the 3rd of July, was discounted on the 21st of April: what was its value at that time, at 5 per cent.?
9. A merchant purchases £1000 worth of goods at 9 months' credit, and sells them for £1050 ready money: what is his gain?—reckoning the interest of money at the rate of 5 per cent. per annum.
10. What is the cost of £1650 bank annuities, at 86⅜ per cent., including the charge for brokerage, which is 2*s.* 6*d.* per cent.?
11. How much stock in the 3 per cents. can be purchased for £2450, when the price of stock is at 83⅝, and the commission 2*s.* 6*d.* per cent.?
12. The 5 per cents. being at 165¼, and the 3 per cents. at 88⅓, into which stock is it most advantageous to buy?

13. By selling an article for 6*s.* 8*d.* I lost $\frac{2}{7}$ of what it cost me: what did it cost?
14. What must an article which cost 11*s.* 8*d.* be sold for to produce a gain of 20 per cent.?
15. If 9 gallons of water be mixed with 63 gallons of gin at 7*s.* 6*d.* per gallon, what must the mixture be sold at to gain $18\frac{2}{11}$ per cent.?
16. The annual expenses of a union workhouse, which are £4500 in amount, are defrayed by four parishes, each contributing in proportion to its inhabitants, which are 5200, 4700, 4900, and 7700, respectively: what must each parish pay?
17. A certain village being infested with thieves, four proprietors engage a person at £1 a week to watch. This salary is to be paid in proportion to their rents, which are £55, £58. 10*s.*, £62, and £64. 10*s.* respectively: how much per week must each contribute?
18. A, with a capital of £1000, began trade on the 1st of January, and at the end of two months takes in B as a partner, with a capital of £1500; three months after this they admit C, with a capital of £2800. After trading to the end of the year, they gain £1776. 10*s.*: how must this be divided?
19. Two merchants, A and B, enter into partnership; A put in £5000 and B £6500. At the expiration of a year another partner, C, was taken with a capital of £10,000. Four years and a half after A and B's commencement, a dissolution was agreed upon, when the profits amounted to £36,500: what was A's share?
20. Three travellers, A, B, and C, meet where there are no provisions. A brings 4 loaves, B 3 loaves, and C pays them 7*d.* to have the loaves equally divided amongst all. How must the 7*d.* be divided between A and B?

21. Three travellers, A, B, and C, meet where there are no provisions. A brings 3 loaves, B 2 loaves, and C pays them $2\frac{1}{2}d.$ to have the loaves equally divided. How must this sum be divided between A and B?
22. Four travellers meet where there are no provisions. A brings 4 loaves, B $3\frac{1}{2}$ loaves, and C $4\frac{1}{2}$ loaves, and D pays them $6d.$ to have the loaves equally divided. How must the $6d.$ be divided among A, B, and C?
23. In the last question, what will each receive, if D pays them $9d.$?
24. In a mixture of 20 gallons of spirits and 8 gallons of water, what part of the whole is spirits?
25. In what proportions must spirits at $18s.$ per gallon and water be mixed, that a gallon may be worth $15s.$?
26. How much water must be mixed with rum at $18s.$ per gallon to fill a cask of 100 gallons, so that a gallon of the mixture may be worth $15s.$?
27. Bell metal is composed of three parts of copper and one part of tin: how much of each is there in a bell weighing 150 lbs.?
28. How much water and pure spirits are there in 84 gallons of a mixture containing 48 parts of spirits and 52 of water?
29. My purse and money together are worth $12s.$ $8d.$; but the money is worth 7 times the purse: what does the purse contain?
30. Divide £100 among 6 men, 9 women, and 12 children, that their shares may be as the numbers 3, 2, and 1.
31. A has £150. $2s.$ $4d.$, and B has £121. $6s.$ $8d.$: what must A give B, that he may have twice as much as A?
32. A has £100, and B has £200: what sum must B give A, that his money may be to B's as 2 to 3?
33. A has £156. $10s.$ $4d.$, and B has £121. $9s.$ $8d.$: what must A give B that his money may be to B's as 8 to 7?

34. A horse consumes a peck of oats and half a truss of hay per day: what is the annual expense of his keep?—reckoning the oats at 35*s.* per qr., and the hay at £4. 10*s.* per load of 36 trusses.

35. When flour sells at £2. 18*s.* per sack of 347½ lbs., and the quartern loaf at 11*d.*, how much does a baker receive to bake a sack of flour, the quartern loaf weighing 69½ ounces?

36. If a person's estate be worth £1384. 16*s.* a year, and the land tax is 2*s.* 9½*d.* in the pound: what is his income?

37. In the year 1831, four of the principal houses in Glasgow employed 3040 power looms in the manufacture of calico. These looms on an average weave 14 yards each per day. Allowing each loom to work 300 days in a year, what quantity would the whole produce in that time?—and what sum would it amount to a 4½*d.* per yard?

38. A man pays a corn rent of 5 qrs. of wheat and 3 of barley, Winchester measure: what is the value of his rent, wheat being at 60*s.* and barley at 54*s.* a quarter, imperial measure?—a Winchester gallon being $\frac{33}{32}$ of an imperial gallon.

39. A pound of mould candles costs 8*d.*, and contains six candles; 1 lb. of dipt candles costs 6½*d.*, and contains 10 candles. One mould will burn as long as 2 dipts—viz., 6 hours. Which are cheapest, moulds or dipts?

40. In the last question, in what time will the difference in expense between using moulds and using dipts amount to 1*d.*, supposing that only 1 candle is burning at once, and that there are 3 hours' candle-light in every day?

41. A market woman had 200 eggs, which she intended to sell as follows:—72 at 3 for 4*d.*, 20 at 4 for 3*d.*, and the rest at 3 for 3½*d.*; but having accidentally mixed

the different lots, how must she sell them per score to obtain the same for them as before?

42. A cistern of 180 gallons is filled by 1 pipe in $22\frac{1}{2}$ hours, and by another in 18 hours: in what time will both together fill it?

43. If 3 men and 4 women can do a piece of work in 56 days, in what time can it be done by 1 man and 1 woman working together, supposing that a woman will be able to do $\frac{5}{6}$ of a man's work?

44. If 5 men or 7 women can do a piece of work in 35 days, in what time can 5 men and 7 women do the same?

45. If 10 cannon, which fire 3 rounds in 5 minutes, kill 270 men in $1\frac{1}{2}$ hour, how many men will 20 cannon, which fire 5 rounds in 6 min., kill in one hour?

46. If 11 horses eat $19\frac{1}{4}$ bushels of oats in 7 days, in what time will 35 horses eat $113\frac{3}{4}$ bushels?

47. If 7 men, working 12 hours a day, earn £9. 10*s*. 6*d*. in $10\frac{1}{2}$ days, what sum will 21 men, working 10 hours a day, earn in $26\frac{1}{4}$ days?

48. If 5 steam engines of 9-horse power in 3 weeks raise 25 three-bushel sacks of wheat, weighing 60 lbs. a bushel, when employed 3 days a week, and 10 hours a day,—in what time will 9 engines of eight-horse power raise, through 16 times the former height, 75 two-bush. sacks of wheat, weighing 63 lbs. a bush., when employed 5 days a week, and 9 hours a day?

49. In 672 Spanish guilders of 2*s*. each, how many French pieces of 17*s*. 6*d*. each?

50. An English shilling is equivalent to 1*s*. 1*d*. Irish: how much Irish money is equivalent to £1 sterling?

51. How many francs are equivalent to £5. 13*s*. 9*d*. English?—24 francs being equivalent to £1.

52. How much Flemish money is equivalent to £98. 9*s*. $4\frac{1}{2}$*d*.?—12 florins Flemish being equivalent to £1.

53. If £1000 be due from London to Paris when £1 is worth 25 francs, how much must be remitted when a guinea is worth 27 francs?

54. If 4 lbs. of coffee = 3 lbs. of tea, and 20 lbs. of sugar = 6 lbs. of coffee, how much tea should I have for 40 lbs. of sugar?

55. If 16 plums = 12 pears, and 15 pears = 10 apples, how many apples = 72 plums?

56. If 1 ox = 8 sheep, and 3 oxen = 2 horses, what is the value of each horse?—reckoning the sheep at £2. 10*s*.

57. If 12 peaches = 84 apples, 8 apples = 24 pears, and 15 pears = 105 plums, how many plums shall I have for 30 peaches?

58. If 7 oxen = 20 sheep, 5 sheep = 11 hogs, and 3 hogs = 14 loads of wheat, how many loads of wheat must be given for 20 oxen?

59. If 8 apples = 14 pears, 4 pears = 50 nuts, 200 nuts = 7 peaches, and 14 peaches = 200 cherries, how many apples are 50 cherries worth?

60. If 1 lb. of tea = $2\frac{1}{2}$ lbs. of coffee, and 1 lb. of coffee = $3\frac{1}{2}$ lbs. of sugar, what will be the value of 56 lbs. of tea, when sugar is worth 7*d*. per pound?

61. If $\frac{1}{3}$ of a sheep = $\frac{2}{3}$ of £1, and $\frac{3}{7}$ of a sheep = $\frac{1}{14}$ of an ox, how much is given for 100 oxen?

62. If 4*s*. 6*d*. at Amsterdam be given for 1 crown of Paris, and £1. 13*s*. 9*d*. at Amsterdam be given for £1, what English money is equivalent to a crown French?

63. A merchant has a sum of money to remit to Amsterdam. The direct exchange is 37*s*. Flemish for £1 sterling; but between London and Paris the exchange is at 24 francs for £1 sterling; and between Paris and Amsterdam the exchange is 54*d*. Flemish for 3 francs. Had he better remit direct or through Paris?

64. What is the least whole number of miles a person must travel each day, to arrive in London on Friday, supposing him to leave York on Monday morning? —the distance being 196 miles.

65. A cistern is $\frac{2}{3}$ full of water; and after 35 gallons are drawn off, it is $\frac{2}{5}$ full: how many gallons does it hold?

66. A post is $\frac{1}{7}$ in the mud, $\frac{2}{7}$ in the water, and 10 ft. above the water: what is its whole length?

67. A person having two sons, bequeathed $\frac{11}{20}$ of his estate to the elder, and the remainder to the younger. The difference between the two legacies was £525: what was the value of the estate?

68. From a vessel of wine containing 50 gallons, 10 gallons are taken, the vessel filled up with water, and 10 gallons of the mixture drawn off: how many gallons of wine are left?

69. The reckoning of a company at a tavern amounted to 13*s.* each; but three of them having no money, the rest paid 4*s.* 4*d.* a piece more: how many were there?

70. A man was engaged for 36 days, on the condition that for every day he worked he should receive 2*s.* 6*d.*, and for every day he played he should forfeit 1*s.* 6*d.* At the end he received £2. 18*s.*: how many days did he play?

71. A father bequeathed £5350 to his 3 sons in such proportions that 5 times the share of the eldest, 6 times the share of the second, and 7 times the share of the youngest, made the same sum: what was the share of each?

72. A man was engaged for 40 days, on the condition that for every day he worked he should receive 1*s.* 8*d.*, and for every day he played he should forfeit 8*d.* At the end he received 31*s.* 8*d.*: how many days did he play?

73. A man's male labourers are paid 1*s.* 4*d.* per day; and he has 21 female labourers at 11*d.* per day. Their wages average 14½*d.* per day. How many male labourers had he?

74. A man's male labourers, of whom he has 18, are paid 2*s.* 4*d.* per day; and his female labourers are paid 1*s.* 10*d.* per day. Their wages average 2*s.* per day. How many female labourers had he?

75. I mixed 35 lbs. of tea with 20 lbs. which were 1*s.* 10*d.* per lb. dearer than the other. The mixture was worth 7*s.* 4*d.* per lb.: what was each kind worth?

76. In a certain election, in which there were 4 candidates, the number of voters in the aggregate was 7456; and the number polled for the successful candidate was 119, 176, and 349 more than those polled for the other 3 candidates: how many voted for each?

77. A person having to go 10 miles from Sheffield wishes to walk the first 5, and then to be overtaken by a coach, which leaves Sheffield at 6 o'clock: at what time must he set out, supposing him to walk 3 miles an hour, and the coach to run 6 miles an hour?

78. At what time must he set out, if he walks 4 miles an hour?

79. The hands of a watch are exactly together at 12 o'clock: when are they next together?

80. At what time between 2 and 3 o'clock are the hands of a watch exactly together?

81. A grocer mixed 35 lbs. of tea at 6*s.* 8*d.* with 20 lbs. at 8*s.* 6*d.*: what was a lb. of the mixture worth?

82. How many gallons of water must be mixed with 84 gallons of spirits at 12*s.* 6*d.* per gallon, so that the mixture may be worth 10*s.* 6*d.* per gallon?

83. Divide 8*s.* 6*d.* between 2 persons, so that one may receive 1*s.* 6*d.* more than the other.

84. A man riding after a chaise is a mile behind it, but he gains 10 yards a minute: in what time will he overtake it?

85. A cistern of 180 gallons is filled by one pipe in 10 hours, and by another in 15 hours; in what time will both fill it?

86. A library consists of 100 books at the following prices:—10 at 2*s.* 6*d.*, 15 at 3*s.* 6*d.*, 20 at 4*s.* 6*d.*, 30 at 5*s.* 6*d.*, 20 at 6*s.* 6*d.*, and 5 at 7*s.* 6*d.* each. Find the average price.

87. If an ox be worth 8 sheep, and 5 oxen be worth 3 horses, what is the value of a horse?—reckoning the sheep at £2. 5*s.* each.

88. If 4 lbs. of coffee = 3 lbs. of tea, and 10 lbs. of sugar = 3 lbs. of coffee, how much tea = 20 lbs. of sugar?

89. If a cistern be filled by 2 pipes in 10 hours, and by one of them in 15 hours, in what time can it be filled by the other?

90. If a cistern be filled by one pipe in 10 hours and emptied by another in 15 hours, in what time would it be filled if both were running?

91. If 84 gallons of rum cost £50, how many gallons must be mixed with it to reduce the value to 9*s.* 6*d.*?

92. 63 gallons of gin cost £23. 12*s.* 6*d.*: how much water must be mixed with it, so that, by selling the mixture at 7*s.* 9*d.* a gallon, there may be a gain of £4. 5*s.* 6*d.*

93. If 44½ guineas weigh 1 lb. Troy, and 32 halfpence 1 lb. Avoirdupois, what is the difference in weight between a guinea and a halfpenny?—1 lb. Avoir. = 7000 grs. Troy.

94. If A can do a piece of work in 3 days, B three times as much in 8 days, and C five times as much in 12 days, in what time can they do it together?

95. A cistern has two pipes, by one of which it is filled in 40 min., and by the other in 50 min. It is emptied by the waste pipe in 25 min. In what time would it be filled when all are running?

96. A fast train leaves London for Bristol, a distance of 120 miles, at 2 o'clock, going 25 miles an hour. At what time must a luggage train, travelling 15 miles an hour, have left so as not to be overtaken?

97. A, B, C rent a house for 2 years at £150 per annum. A remains in it the whole time, B 16 months, and C 4½ months during the occupancy of B: what should each pay?

98. If 15 men 12 women and 9 boys can do a piece of work in 50 days, how long will 9 men 15 women and 18 boys be in doing double the quantity?—the parts done by each being as the numbers 3, 2, and 1.

99. If 6 horses and 11 sheep eat the grass off 1½ acres in 5 days, in how many days will 50 sheep and 8 horses eat the grass off 2½ acres, if 3 horses eat as much as 50 sheep?

100. If 21 horses and 217 sheep can be kept 10 days for £56. 8*s*. 4*d*., what sum will keep 9 horses and 60 sheep for 27 days, if 3 horses eat as much as 50 sheep?

101. At what time between 7 and 8 o'clock are the hands of a clock exactly together?

102. At what time between 8 and 9 o'clock are the hands of a watch exactly together?

103. At what time between 2 and 3 o'clock are the hands of a watch exactly at right angles to each other?

104. At what time between 12 and 1 o'clock do the hands a watch point in exactly opposite directions?

105. At what time between 2 and 3 o'clock do the hands of a watch point in exactly opposite directions?

106. There are two stage coaches between London and Exeter, the outside fares by which are 18*s.* and 30*s.*, performing the journey in 17 hours and 25 hours. A person wishing to travel from one city to the other is at a loss which of the two vehicles to select, as, by the more expeditious, he will be enabled to resume his occupation, at which he earns 1*s.* an hour; whereas by going by the slower, he will be delayed for 8 hours. Will he gain or lose by paying the higher fare?

107. Two clocks point to 12 at the same instant. One gains 7 seconds in 12 hours; and the other loses 8 seconds in 12 hours: in what time will one have gained half an hour on the other?

108. What time will each clock then show?

109. Four gentlemen wishing to go from Reading to Henley, a distance of 11 miles, hired a boat for the purpose, for which they were to pay 16*s.* 6*d.* On arriving at Sonning, three miles from Reading, a request for seats was made by two persons, who, on their agreeing to pay a share proportional to the distance, were admitted; and two others were received on the same terms at Shiplake, a village three miles from Henley. What portion of the expense must each of the parties bear?

110. If beer, which is brewed with 3 bushels of malt to the barrel, cost 1*s.* 3*d.* per gallon when malt is at 62*s.* 8*d.* per quarter, how much will beer cost per gallon, which is brewed with 5 bushels of malt to the barrel, when a quarter of malt costs 50*s.*?

111. Find the square roots of $5\frac{1}{16}$ and ·0001.

112. Find the side of a square equal to a rectangle whose sides are 576 ft. and 1396 ft.

113. The side of a square field measures 125 yards: re-

quired the side of another square field four times as large.

114. The base of a right-angled triangle is 8 ft. 6 in., and perpendicular 11 ft. 4 in.: find the hypothenuse.

115. Find the value of ·34375 cubic feet.

116. Find the contents of a box whose length is 3·75 ft., breadth 2·2 ft., and depth 1·5 ft.

117. A cistern, 8 ft. long and 6 ft. broad, contains 525 cubic feet of water: what is the depth of water?

118. The weight of a bar of iron, 3 ft. long, 2 in. broad, and $1\frac{1}{2}$ in. thick, is 30 lbs.: what is the weight of a bar $8\frac{1}{2}$ ft. long, 4 in. broad, and $2\frac{1}{4}$ in. thick.?

119. What weight of water will a cistern contain—the depth 3 ft. 3 in., length 4 ft., and breadth $2\frac{1}{3}$ ft.? (A cubic inch of water = 1000 oz. Avoir.)

120. How many bricks, each 9 in. long, $4\frac{1}{2}$ in. wide, and 3 in. thick, will it take to build a wall $\frac{1}{4}$ mile long, 10 ft. high, and $1\frac{1}{4}$ ft. thick?

121. Find the cube root of $\frac{1}{8}$, $\frac{8}{27}$, ·296̇.

122. What is the side of a cubical vessel containing 21952 cubic feet?

123. Find the side of a cube containing 4 cubic ft. 1088 in.

124. How many lbs. of gunpowder will fill a box 3 ft. long, 2 ft. deep, and $1\frac{1}{2}$ ft. broad?—a cubic foot of gunpowder = $58\frac{1}{4}$ lbs.

FINIS.

Printed by C. F Hodgson and Son. Gough Square, Fleet Street.

APPENDIX.

EXAMINATION PAPERS.

OXFORD LOCAL.

1. 1860.—JUNIOR.

1. Write down in figures:—
   (*a*) One million fifty-seven thousand and two.
   (*b*) Seven hundred and three million fifteen hundred and seven.
2. Add together—74295583, 1027968, 70624, 4968735, 26587469, 42897.
3. Add together—7296*l.* 14*s.* 8$\frac{3}{4}$*d.*, 417*l.* 9*s.* 7$\frac{1}{2}$*d.*, 3246*l.* 17*s.* 4$\frac{1}{4}$*d.*, 29*l.* 8*s.* 9$\frac{1}{2}$*d.*, 1877*l.* 3*s.* 11*d.*, 824*l.* 19*s.* 3$\frac{3}{4}$*d.*
4. From 7832165843 take 687357289.
5. From 837965*4l.* 13*s.* 2$\frac{1}{2}$*d.* take 796877*l.* 15*s.* 9$\frac{3}{4}$*d.*
6. Multiply 467259873 by 397506.
7. Multiply 65943*l.* 17*s.* 11$\frac{3}{4}$*d.* by 11.
8. Multiply 7365*l.* 9*s.* 4$\frac{1}{4}$*d.* by 97.
9. Divide 539216473 by 479.
10. Divide 76873*l.* 15*s.* 7$\frac{1}{2}$*d.* by 16.
11. Divide 405211*l.* 0*s.* 3$\frac{1}{2}$*d.* by 38.
12. Divide 36 by ·012, ·36 by 120, and 3·6 by 1·2.
13. Express, as vulgar fractions, ·5, ·05, and ·015.
14. Reduce 7 oz. to the vulgar and decimal fraction of 2 cwt.
15. Simplify the following:—

(i.) $$\frac{3}{8-\frac{7}{2-\frac{3}{4}}}+\frac{5}{6-\frac{5}{2-\frac{5}{6}}}$$

(ii.) $$\frac{\frac{1}{5}\text{ of }1\frac{1}{4}\text{ of }4\frac{1}{2}}{\frac{5}{36}\text{ of }1\frac{1}{3}\text{ of }3\frac{1}{2}}-\frac{3\frac{1}{2}+4\frac{1}{2}}{6\frac{1}{2}+1\frac{1}{1\frac{1}{2}}}$$

16. Extract the square root of 622521, and of ·4.
17. If a person transfers 1234*l.* from the 3$\frac{1}{4}$ per cents., at 88$\frac{1}{8}$, to the 3$\frac{1}{2}$ per cents., at 95$\frac{3}{8}$, what is the difference in his income?

18. If 7 bushels 2 pecks be consumed by 10 horses in 7 days; how many horses will consume 3 quarters 6 bushels in 10 days?

19. Divide 45*l.* amongst three persons, so that their shares shall be as 3, 5, 7.

SENIOR.

20. Write down in figures:—

(i.) Nine hundred and seven thousand and two.

(ii.) Twenty million fifty-three thousand and twenty-seven.

(iii.) Seven hundred and nine million twelve hundred and sixty.

21. How many seconds are there in 100 years?

22. In 100,000,000 inches, how many miles, &c.?

23. If 1000 sovereigns weigh 21 lb. 5 oz. 16 dwt., what weight is contained in 192 sovereigns?

24. If 20*l.* gain 16*l.* in 15 months, what sum will gain 24*l.* in 3 months at the same rate?

25. Find the price of 2 cwt. 3 qr. 12 lb., at 1*l.* 7*s.* 6*d.* per cwt.

26. Find the value of 44 acres 2 rds. 25 poles, at 55*l.* 16*s.* 7½*d.* per acre.

27. Find the simple interest on 635*l.* 18*s.* 4½*d.*, at 3 per cent., for 3½ years?

28. How much will 725*l.* amount to in 4 years, at 5 per cent. compound interest?

29. Add $1\frac{1}{3}$, $\frac{8}{3}$ of $\frac{41}{34}$, $\frac{4}{5\frac{1}{10}}$.

30. Subtract $5\frac{6}{9}$ from $14\frac{2}{7}$.

31. Multiply $\frac{3}{4}$ of $1\frac{5}{11}$ by $\frac{8}{7}$ of $8\frac{7}{9}$.

32. Divide $27\frac{1}{16}$ by $3\frac{1}{4}$.

33. Add 17·493, 2·574, 125, and ·00427.

34. Subtract 5·64723 from 129·068.

35. Multiply 34·203 by ·0123.

36. Divide 84·375 by ·00375.

37. What decimal of 1*l.* is 8·4 of a penny?

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2. 1861.—JUNIOR.

1. Write down in figures—One million eleven thousand and one; and Fifty-seven millions three thousand and thirteen.

2. Add together—6543, 807, 54091, 9999, and 38.

3. Add together—71*l.* 3*s.* 4½*d.*, 19*s.* 8½*d.*, 2*l.* 0*s.* 3*d.*, 1*l.* 8*s.* 0¾*d.*, and 284*l.* 15*s.* 5½*d.*

4. From 812356 take 75849.

5. From 8133*l.* 11*s.* 6½*d.* take 533*l.* 13*s.* 8¾*d.*

6. Multiply 82653 by 19800.

7. Multiply 1375*l.* 0*s.* 8¾*d.* by 8, and by 17.

8. Divide 774656 by 256.

9. Divide 2065*l.* 19*s.* 6*d.* by 8, and by 23.

10. Multiply ·008 by ·0016, and divide the greater by the less.

11. Reduce $\frac{11}{8800}$ to a decimal, and $\cdot\dot{2}7\dot{0}$ to a vulgar fraction.

12. Find the value of ·8125 cwt., and reduce $\frac{1}{8}$ of 2*s.* 7$\frac{1}{2}$*d.* to the fraction of a guinea.

13. Prove that a square room, whose side is 17 ft. 6 in. long, will require 43 yds. 2 ft. 3 in. of carpet 2 ft. 4 in. wide; and find the value of the carpet at 3*s.* 9*d.* a yard.

14. If $2\frac{3}{4} - 1\frac{5}{8}$ of an estate cost 440*l.*, what will $2\frac{1}{2}$ of $\frac{5}{12}$ of it cost?

15. Find the square root of 207936; also of ·005.

16. What sum put out to interest for 18 months at 5 per cent. will amount to 188*l.* 2*s.* 6*d.*?

SENIOR.

17. Write down in figures—
   (*a*) One million thirty thousand and fifty.
   (*b*) Forty million five hundred thousand six hundred and seventeen.

18. Reduce 201*l.* 15*s.* 4$\frac{1}{2}$*d.* to halfpence.

19. Reduce 803073 to cwts., &c.

20. If 152 sacks hold 65 qrs. 2 bush. 2 pks., how many sacks will contain 18 qrs. 7 bush. 1 pk.?

21. If a man walk 600 miles in 25 days, walking 8 hours a day; in how many days will he walk 330 miles, walking 10 hours a day?

22. Find the value of 2 acres 3 rds. 16 po. at 24*l.* 13*s.* 4$\frac{1}{2}$*d.* per rood.

23. Find the simple interest on 451*l.* 17*s.* 6*d.* for 4 yrs. at 2$\frac{1}{4}$ per cent.

24. What length of paper 27 inches broad is required for a room 18 ft. long, 12 ft. broad, and 11 ft. high?

25. Add $\frac{7}{12}$, $2\frac{1}{8}$, $\frac{5\frac{1}{2}}{4\frac{3}{5}}$.

26. Subtract $9\frac{7}{10}$ from $10\frac{7}{9}$.

27. Multiply $6\frac{2}{7}$ of $11\frac{3}{4}$ by $1\frac{3}{5} + 2\frac{2}{3}$.

28. Add 15·0102, ·004, 20, and ·8628.

29. Subtract 46·25107 from 47·132.

30. Multiply ·0125 by 20·08.

31. Divide 21·97 by 1·69, by ·169, and by 1690.

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3. 1862.—JUNIOR.

1. Write down in figures—
   (*a*) Four millions one hundred and twenty-three thousand six hundred and ninety-four.
   (*b*) Three hundred thousand and three.

2. Add—9873, 361, 10458, 94, and 7290.

3. Add—491*l.* 17*s.* 7$\frac{1}{2}$*d.*, 34*l.* 5*s.* 9*d.*, 1058*l.* 18*s.* 10$\frac{1}{2}$*d.*, 7*s.* 4$\frac{1}{2}$*d.*, and 97*l.* 0*s.* 11$\frac{1}{2}$*d.*

4. From 9768452 take 839204.

5. From 4586*l.* 7*s.* 9$\frac{1}{2}$*d.* take 1397*l.* 18*s.* 10$\frac{1}{2}$*d.*

6. Multiply 59872 by 47930.

7. Multiply 4964*l.* 14*s.* 7$\frac{3}{4}$*d.* by 7.

8. Multiply 399*l.* 11*s.* 4$\frac{1}{2}$*d.* by 59.

9. Divide 795495 by 293.

10. Divide 149*l.* 6*s.* 10$\frac{1}{2}$*d.* by 6.

11. Divide 317235*l.* 1*s.* 6¾*d.* by 145.

12. Simplify (i.) $\frac{2\frac{1}{2}+3\frac{1}{3}-4\frac{1}{4}}{5\frac{1}{2}+7\frac{1}{12}}$, (ii.) $4\frac{2}{5}\times 6\frac{2}{7}\div\frac{2\frac{1}{2}}{7}$.

13. What is the value of $\frac{7}{19}$ of 8*l.* 12*s.* 11¾*d.*? and how many rods are there in 10 miles 5 fur. 7 chains 11 yds.?

14. Multiply ·02057 by ·0039; and divide ·144 by 1200.

15. Reduce 4*l.* 17*s.* 3½*d.* to the decimal of a guinea, and find the value of 14·1275 acres.

16. Find the value of 24 cwt. 3 qrs. 16 lbs. 10 oz., at 2*l.* 10*s.* 8*d.* per cwt.

17. If it cost sixteen guineas to supply 30 men 48 women and 60 boys with bread for a week, supposing a man to eat twice as much as a boy, and a woman to eat one-fourth less than a man; how much will supply 25 men 60 women and 72 boys for 10 days?

18. What is the present value of 1680*l.* due 4 years hence, at 4½ per cent.

SENIOR.

19. Write down in figures—One hundred and four million seven thousand and eighty-two.

20. Add together—$\frac{7}{9}$ of 1*l.* 10*s.* 4½*d.*, $\frac{4}{5}$ of 2*l.* 8*s.* 4*d.*, and $\frac{3}{7}$ of half a guinea; and subtract their sum from 5*l.*

21. Reduce 5 cwt. 3 qrs. 17 lbs. 10 oz. to oz.; and 4037 halfpence to pounds, &c.

22. Make out the bill for the following articles:—10¼ yds. of ribbon, at 2½*d.* a yd.; 13 yds. 2 qrs. 3 nails of calico, at 8*d.* a yd.; 106 reels of cotton, at 8*d.* per doz.; 10 pieces of tape, at 2¾*d.* a piece; and one umbrella, at 10*s.* 6*d.*

23. If an income of 300*l.* pays 11*l.* 5*s.* for income tax; how much is paid for 525*l.* 10*s.*?

24. The rental of a parish is 1850*l.*, and the rates are taken on 80 per cent. of the rental. What is the amount at 9*d.* in the pound?

25. Find the value of 3 cwt. 2 qrs. 21 lbs. at 55*l.* 10*s.* 6*d.* per cwt.

26. If 3*l.* 10*s.* are the wages of 4 men for 6½ days, what are the wages of 17 men for 4 weeks of 5½ days in each week?

27. Find the values of the following:—

(i.) $\frac{1}{3}+\frac{1}{8}-\frac{6}{7}+\frac{3}{35}$, and (ii.) $\frac{4\frac{1}{7}-2\frac{1}{4}}{6\frac{1}{2}+2\frac{1}{7}}\div\frac{\frac{3}{7}+\frac{1}{2}}{\frac{5}{7}-\frac{1}{2}}$

28. Add ·00125, 14·473, 12500, ·0032; and subtract the sum from 13748·64.

29. Find the product of ·47 × ·00432; and find the quotient of 4·8 ÷ ·0016.

30. Reduce 1*l.* 14*s.* 9¾*d.* to the decimal of two guineas.

31. Find the value of ·72645 of 1*l.* 14*s.* 6*d.*; and 2·35 miles.

32. Find the amount of 260*l.* 10*s.* in 3 yrs., at 5½ per cent. compound interest.

33. Extract the square root of 22530·01, and the cube root of 8120601.

4. 1863.—JUNIOR.

1. Write down in figures—Seven million thirteen thousand five hundred and one.

2. Add—4019, 50037, 88, 9900, and 390. Also add—51*l.* 13*s.* 7¾*d.*, 18*s.* 0½*d.*, 270*l.*, 1235*l.* 16*s.* 5*d.*, and 189*l.* 0*s.* 9½*d.*

3. From 2324596 take 584468; and subtract 281*l.* 13*s.* 5¾*d.* from 6302*l.* 11*s.* 2½*d.*

4. Multiply 2895 by 35700.

5. Multiply 388*l.* 12*s.* 9¾*d.* by 47.

6. Divide 491238 by 827.

7. Divide 153*l.* 1*s.* 3¾*d.* by 9, and by 29.

8. Reduce 819*l.* 14*s.* 3½*d.* to farthings; 10729 lbs. avoirdupois to tons, &c. and 38½ quarters to pecks.

9. If 2 roods 15 poles cost 59*l.* 7*s.* 6*d.*, what will 8 acres 17 poles cost?

10. If 10 men and 15 boys reap a field in 6 days, in how many days will 7 men and 12 boys reap it, if 2 men do as much as 3 boys?

11. Find, by Practice, the value of 1 ton 14 cwt. 1 qr. 11 lb. 12 oz., at 4*l.* 13*s.* 4*d.* per cwt.

12. Simplify $\frac{64961}{68419}$, and $\frac{2\frac{5}{6}}{5} - 10\frac{5}{6} \div 1\frac{1}{3}\frac{3}{5} + \frac{5}{7}$ of $3\frac{3}{4}$ of $3\frac{1}{3}$.

13. What fraction of 3 poles are 2 poles 22 yards?

14. Three wheels, making 60, 36, and 24 revolutions in a minute, start with certain points in their circumferences downwards; when will they first come all together again?

15. Divide 1126·08 by ·00276, and reduce $\cdot 02\dot{2}\dot{7}$ to a vulgar fraction.

16. The seconds-pendulum being 1·0872 yards long, express its length in metres, if 1 metre = 39·3708 inches.

17. Find the true discount on 5135*l.* for 219 days, at 4½ per cent.

18. If a certain MS. fill 6 printed sheets, each containing 32 pages, and each page 24 lines, with 9 words in each line; how many lines of 12 words each must there be in a page, in order that another similar MS., twice as long, may fill 3 sheets, each 48 pages?

SENIOR.

19. Reduce 11495 square yards to acres, &c.; and 3 yds. 3 nls. 1½ in. to inches.

20. Find, by Practice, the cost of 227 tons 7 cwt. 84 lb. of coals, at 18*s.* 4*d.* per ton.

21. If forty shillings weigh 7 oz. 5 dwt., and contain 10 dwt. 21 gr. of alloy; how much pure silver is there in one shilling?

22. Simplify (i.) $7\frac{3}{4} + \frac{5}{7}$ of $\frac{4\frac{1}{2}}{2\frac{1}{4}} - 13 \times \frac{7}{65}$, (ii.) $\frac{3330}{5328}$; and find the L.C.M. of 27, 18, 24, 45.

23. From $2\frac{2}{3}$ of 11*s.* 8*d.* take $1\frac{1}{3}$ of 17*s.* 2½*d.*, and reduce the remainder to the fraction of 13*s.* 5½*d.*

24. If the duty on 2 cwt. 3 qrs. 5 lbs. amount to 2*l.* 18*s.* 8¼*d.*, what is the rate per cwt.?

25. If 8 horses plough 11⅔ acres in 2 days, in how many days will 6 horses plough 17½ acres?

26. Find the simple interest on 346*l.* 15*s.* in 2 years 220 days, at 5 per cent. per annum.

27. Reduce to decimals:—

$$\text{(i.)}\ \frac{3}{10} + \frac{7}{10000} + \frac{12}{1000000}, \quad \text{(ii.)}\ \frac{29}{66};$$

and find the fractions equivalent to ·2625 and ·602$\dot{7}\dot{7}$.

28. Multiply ·575 by 2·04, and divide the product by 184000.

29. Reduce 2*s.* 2½*d.* to the decimal of 1*s.* 8*d.*, and 3 pecks 1 gall. 2 qts. 1 pt. to the decimal of 8 bushels.

30. If 25 lbs. of coffee at 1*s.* 1½*d.* per lb., be mixed with 200 lbs. at 1*s.* 8¼*d.*, what is the value per lb. of the mixture?

31. Make out a bill for the following articles:—15 yards of damask for curtains, at 4*s.* 9*d.* a yard; 28 yards of gimp, at 10½*d.*; 24 rings, at 4*s.* 3*d.* per dozen; 24 hooks, at 1¾*d.* per dozen; and workwoman's time, 2½ days, at 2*s.* 3*d.* a day.

32. If 5½ per cent. would be gained by selling 121 yards of silk for 26*l.* 11*s.* 10¾*d.*, at what price per yard must it be sold to gain 12 per cent.?

33. If 1 lb. of metal, containing copper and zinc in the ratio of ·84 to ·16, be mixed with 2 lbs. containing the same metals in the ratio of ·75 to ·25, find how much copper and zinc there is in 1 lb. of the mixture.

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5. 1864.—JUNIOR.

1. Write in words 15006021; and state how many times a number is increased by annexing three ciphers.

2. Add together—2750*l.* 3*s.* 11¾*d.*, 106*l.* 18*s.* 1½*d.*, 3*s.* 4¼*d.*, and 50*l.* 7*s.* 1¾*d.*

3. Subtract 657381 from 3547216; and 11*s.* 11¾*d.* from 1*l.* 1*s.* 2½*d.*

4. Multiply 85762 by 3109.

5. Multiply 3*l.* 7*s.* 11½*d.* by 35.

6. Divide 6*l.* 9*s.* 5¾*d.* by 11; and 146*l.* 14*s.* 10½*d.* by 53.

7. Reduce 2 mls. 6 fur. 4 yds. to feet; and 7525 grs. to lbs. Troy.

8. If 17 yards of silk cost 4*l.* 8*s.* 6½*d.*, what will be the cost of 120 yards?

9. If 25 chests of tea weigh 1 ton 3 cwt. 1 qr. 21 lbs., how many chests will weigh 1 ton 11 cwt. 3 qrs. 14 lbs.?

10. How many yards of cloth, worth 18*s.* 3*d.* per yd., ought to be given in exchange for 24 English ells, at 13*s.* 8½*d.* per ell?

11. Find, by Practice, the value of 23 cwt. 1 qr. 23 lbs., at 3*l.* 18*s.* 9*d.* per cwt.

12. Simplify $\frac{18}{17}\left(1-\frac{64}{81}\right)+\frac{8}{11}\times\frac{1}{6}\times\left\{\frac{1}{2}+\frac{5}{12}\right\}+\frac{1\frac{1}{3}\text{ of }9\frac{1}{2}}{2\frac{3}{4}\text{ of }7\frac{1}{11}}$.

13. Divide 28·9 by 17; also 289 by ·17, and ·289 by ·017.

14. Express 2 feet 3 inches as (1) the vulgar, (2) the decimal fraction of $4\frac{1}{2}$ yards.

15. What is the cost of papering a room, 6 yds. 1 ft. 1 in. long, 6 yds. 4 inches broad, 12 ft. high, with paper $\frac{1}{3}$ of a yard wide, at $4\frac{1}{2}d.$ per yard?

16. For what sum must I sell a horse that cost me 75*l.* 10*s.*, so as to gain $5\frac{1}{4}$ per cent.?

17. Find the compound interest on 125*l.* for 3 years at $2\frac{1}{2}$ per cent.

18. If 7 bushels 2 pecks be consumed by 10 horses in 7 days, how many horses will consume 3 quarters 6 bushels in 10 days?

SENIOR.

19. Reduce a million grains of gold to lbs. &c., and 5 lbs. 3 oz. 1 scr. to grains.

20. Find, by Practice, the rent of 39 acr. 2 rds. 18 per., at 2*l.* 5*s.* per acre.

21. Make out a bill for the following articles:—$5\frac{1}{2}$ dozen lbs. of candles, at $8\frac{1}{2}$ per lb.; $8\frac{1}{4}$ lbs. of wax ditto., at 2*s.* 3*d.* per lb.; 7 gall. $2\frac{1}{2}$ pts. of oil, at 4*s.* 8*d.* per gall.; and two lamps, at 13*s.* 9*d.* each.

22. If 13 cwt. 2 qrs. 16 lbs. of rice cost 15*l.* 17*s.* $6\frac{1}{2}d.$, what is the cost of 3 tons 1 cwt. 1 qr. 16 lbs.?

23. What fraction of $9\frac{1}{4}$ guineas is $\frac{7}{16}$ of 9*l.* 17*s.* 4*d.*?

24. Reduce to their simplest forms—

$$\text{(i.)}\ 1\tfrac{3}{8}-\frac{6}{8}+\frac{4}{5}-\frac{20}{24}-\frac{2}{5}-\frac{1}{2}; \quad \text{(ii.)}\ \frac{24389}{26071}.$$

25. If 44 labourers do a piece of work in 15 days, of 10 hours each, how many navvies must be employed to do $\frac{3}{4}$ more work in 7 days of 11 hrs., supposing 3 navvies do the work of 5 labourers?

26. Add together 265 millionths, 98 ten-thousandths, 46 hundredths; and subtract their sum from 7 tenths, 4 hundred-thousandths.

27. Find (1) the product, (2) the quotient, of ·36 by ·00828.

28. Express ·0875 and $\cdot 01\dot{3}\dot{6}$ as vulgar fractions; and reduce 7*l.* 13*s.* $6\frac{3}{4}d.$ to the decimal of 20*l.*

29. The annual premium on a fire insurance being 13*l.* 5*s.* 3*d.*, the duty charged on it will be 19*l.* 17*s.* $10\frac{1}{2}d.$; how much per cent. of the premium is the duty?

30. How much money must be paid for 1500*l.* stock of the 3 per cents. at $89\frac{5}{8}$, allowing $\frac{1}{8}$ per cent. as commission? And what is the interest per cent.?

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6. 1865.—JUNIOR.

1. Add together—Ten thousand and ninety, One million one thousand and one, Nine hundred thousand one hundred; and subtract Twenty thousand two hundred and ten from their sum.

2. Multiply 98500 by 9070, and divide 62501 by 250.

3. Add 201*l.* 3*s.* $5\frac{1}{4}d.$, 18*l.* 0*s.* $9\frac{3}{4}d.$, 178*l.* 6*s.* $11\frac{1}{4}d.$, 125*l.* 17*s.* $1\frac{1}{2}d.$, 574*l.* 4*s.* 0*d.*, 13*l.* 19*s.* $7\frac{1}{4}d.$

4. Subtract 3*l*. 11*s*. $3\frac{7}{8}d$. from 12*l*., and $5\frac{1}{2}d$. from 2*s*. $2\frac{1}{4}d$.

5. Multiply 1 yd. 2 in. by 37, and divide 53 qrs. 6 bush. 2 pks. 3 qts. 1 pt. by 217.

6. Reduce 483850 cubic inches to yards.

7. Reduce 92*l*. 11*s*. 8*d*. to farthings, and 1 lb. 2 oz. 4 drs. 2 scr. 7 grs. to grains.

8. How long will 12 men take to do a piece of work which 8 men do in 27 days?

9. When eggs are at 24 a shilling, how many must be given in payment of a debt of 1*l*. 11*s*. $5\frac{1}{2}d$.?

10. Reduce to its simplest form the expression

$$\tfrac{7}{15} \times 4\tfrac{1}{3} - \frac{4\frac{1}{2}}{3} + \frac{1\frac{3}{5} - \frac{4}{15}}{\frac{2}{3} - \frac{2}{15}} \times \frac{5\frac{3}{5}}{9\frac{1}{3}}.$$

11. What Decimal Fraction of 5*l*. equals $2\frac{5}{16}$ of 1*l*. 17*s*. 4*d*.?

12. Divide ·0216 by ·25, 1·5 by ·0064, and 3·75 by 225000; and prove that $2\cdot\dot{4}\dot{5} \times 3\cdot1\dot{6} \div 0\dot{1}2\dot{6}$ is equal to 615·6.

13. What principal will amount to 44*l*. 3*s*. $0\frac{1}{4}d$. in $2\frac{1}{4}$ years, at $3\frac{1}{4}$ per cent.?

14. A draper bought 600 yards of silk at 3*s*. $4\frac{1}{2}d$. per yard; and, having sold 360 yards at 4*s*. 6*d*. per yard, and 81 yards at 3*s*. 9*d*. per yard, he was robbed of the rest. What was his whole gain or loss, and his gain or loss per cent. on his outlay?

15. A gentleman, having three sons, aged 24, 16, and 8 years, left his estate to be divided amongst them proportionally to their ages. Eight years afterwards, the second died, and left his portion to be divided between his brothers inversely proportionally to their ages. Find what fractional part of the father's estate each of the surviving sons then had.

SENIOR.

16. Find the area of a flagstone measuring 5 ft. 3 in. by 2 ft. 8 in.

17. Supposing a labourer to receive 13*s*. 5*d*. per week of seven days, find what his wages will amount to from the 1st of April to Christmas day of the same year, both days inclusive.

18. A surveyor's chain is 22 yds. long, and is divided into 100 links. How many square links are there in $2\frac{1}{2}$ acres?

19. Express in their simplest forms:—

(i.) $\frac{594}{2079}$, (ii.) $20\frac{1}{4} + 4\frac{1}{6}$, (iii.) $\dfrac{3\frac{1}{2} - 1}{15\frac{1}{3} + 5\frac{1}{2} - 3\frac{1}{3}} \div \dfrac{1 - \frac{2}{3}}{1 + \frac{2}{4}}$.

20. Divide 48*l*. 6*s*. 3*d*. by 24, and add $1\frac{1}{3}$ of a guinea, $\frac{5}{8}$ of 1*l*., $\frac{5}{16}$ of 2*s*. 6*d*., and $29\frac{19}{20}$ of $7\frac{1}{2}d$.

21. Express 2 ft. $7\frac{1}{2}$ in. as the decimal fraction of 100 yds.

22. Find the value of $\cdot8\dot{6}$ lb. + $2\cdot3\dot{2}$ dwts. + $2\frac{4}{15}$ grs. of pure gold, at 4*l*. 4*s*. 11*d*. per oz.

23. Multiply ·00202 by 2·02, and divide 36 by ·0081.

24. Find the amount of 87*l*. 10*s*. in three years, at 4 per cent. per annum compound interest.

25. A dairyman buys milk at $2\frac{1}{2}d$. per quart, dilutes it with water,

and sells the mixture at 3*d.* per quart. His profits are 60 per cent. upon his outlay. How much water does he mix with each quart of milk?

26. A copyist can transcribe 3 pages of a certain work in $1\frac{1}{2}$ hours. How long will it take three men, working only half as rapidly, to copy 36 pages of another volume, the pages containing $\frac{1}{3}$ as much again as those of the former?

27. A person holds 4450*l.* in the Turkish stocks. If he sells out at $52\frac{1}{8}$, and invests the proceeds in the reduced 3 per cents. at $88\frac{1}{8}$, what will be his income, supposing the broker to have received $\frac{1}{8}$ per cent. commission on each transaction?

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7. 1866.—Junior.

1. Subtract Two thousand and fifty from Forty-one thousand and thirty-three; then to the remainder add Sixteen thousand five hundred and seventy-two.

2. Multiply 3003 by 79000. Divide 10897080 by 120, and 51488703 by 567.

3. Find the sum of 200*l.* 13*s.* $2\frac{1}{2}$*d.*, 23*l.* 5*s.* $1\frac{3}{4}$*d.*, 195*l.* 9*s.* $3\frac{1}{2}$*d.*, 8*l.* 10*s.* $0\frac{1}{4}$*d.*, and 127*l.* 2*s.* 5*d.*

4. Subtract 21*l.* 11*s.* $11\frac{3}{4}$*d.* from 25*l.* 16*s.* 4*d.*

5. Multiply 2 dwts. 2 grs. by 101.

6. Divide 10 tons 8 cwt. 3 qrs. 11 lbs. 12 oz. 15 drs. by 69.

7. How many days are there in the months of February, March, April, May, June, and July, in leap-year?

8. Find the number of cubic inches in 1 cub. yd. 24 ft. 760 in.

9. What is the price of beef per lb., when 4 cwt. are bought for 16 guineas?

10. A person rides 78 miles in 13 hours, how long would he take to accomplish 60 miles?

11. If 53 chests of tea, each weighing 3 qrs. 19 lbs., cost 749*l.* 12*s.* 3*d.*; what did 17 lbs. cost?

12. Find the simplest form of the expression

$$\frac{1\frac{4}{17}\times 6\frac{4}{5}}{3\frac{3}{8}-1\frac{3}{5}\frac{5}{8}}+\frac{2}{11} \text{ of } \left(2\frac{3}{5}-\frac{3}{4}\right)-\frac{1\frac{3}{5}}{12}.$$

13. Multiply 1·00025 by 2400; divide 3075 by ·125; and find the value of $\cdot 1\dot{5}\dot{9}0\times\cdot 47\dot{2}\div 2\cdot\dot{7}$.

14. Reduce $\frac{2}{5}$ of 4 oz. 18 dwt. to decimal of $2\frac{3}{4}$ of 16 dwt. 21 grs.

15. If the interest on 125*l.* for 3 years be 13*l.* 2*s.* 6*d.*, what is the interest on 200*l.* for 5 years?

16. What is the rent, at 1*l.* 13*s.* per acre, of a rectangular field, the length being 1 fur. 20 poles, and breadth 10 poles 1 yd.?

Senior.

17. How many grains Troy are there in a mass of metal weighing 1 cwt. 1 qr. 2 lbs. $11\frac{3}{7}$ oz.?

18. Divide 21544*l.* 14*s.* $2\frac{1}{4}$*d.* by 97.

19. Find, by Practice, the value of 1 qr. 2 bush. 2 pks., at 29*l.* 16*s.* 6*d.* a bushel.

20. Simplify (i.) $\frac{1892}{1936}$, (ii.) $3\frac{1}{3} \div \left\{\frac{1-\frac{1}{16}}{\frac{1}{2}-\frac{1}{8}}\right\}$.

21. Add $\frac{7}{16}$ of 5*l.*, $\frac{3}{4}$ of 9*l.* 13*s.* $2\frac{3}{4}$*d.*, and $\frac{5}{12}$ of 2*s.* 6*d.*

22. Divide 1215013·8 by 2·023, and ·000072072 by ·000012.

23. Reduce 4 oz. 7 dwt. 12 grs. to fraction of 5 oz. Troy, and 14*s.* $7\frac{1}{2}$*d.* to decimal of 5*l.*

24. Reduce $1{\cdot}0\dot{1}$ to a fraction, and divide $27{\cdot}36$ by $3{\cdot}1\dot{0}\dot{9}$.

25. If a cubic foot of marble weigh 2·716 times as much as a cubic foot of water, find the weight of a block 9 ft. 6 in. long, 2 ft. 3 in. broad, and 2 ft. thick, if a cubic foot of water weighs 1000 ounces.

26. It is found that 1296 bricks (the surface of each brick measuring $9\frac{1}{2}$ in. by $4\frac{1}{2}$ in.) are employed in paving a yard; how many tiles, 6 in. square, would be required for a pavement one-ninth of the size?

27. Which is the better stock, the $3\frac{1}{4}$ per cents. at $92\frac{5}{8}$, or the $3\frac{1}{2}$ per cents. at par?

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8. 1867.—JUNIOR.

1. Add together—Fourteen million eight thousand and fifty, and One hundred and three thousand and nine. From this sum subtract Two millions twenty thousand and eighty-seven.

2. Multiply 4620597 by 639, and divide 275457 by 736.

3. Add 472*l.* 11*s.* $4\frac{1}{2}$*d.*, 321*l.* 7*s.* $8\frac{1}{4}$*d.*, 541*l.* 9*s.* $6\frac{3}{4}$*d.*; and from 729*l.* 12*s.* $8\frac{1}{4}$*d.* subtract 391*l.* 15*s.* $6\frac{3}{4}$*d.*

4. The business of a Company produces 24299*l.* 14*s.* 5*d.*: of this amount, 14487*l.* 16*s.* 11*d.* goes for working expenses; the remainder is divided among 100 shareholders. What is the share of each?

5. Multiply 2 tons 5 cwt. 15 lbs. 9 oz. by 27.

6. How many times is 195 yds. 1 ft. 8 in. contained in a mile?

7. A debt of 3*l.* 17*s.* 6*d.* is paid in farthings: how many are required, and what is the aggregate weight, if 8 farthings weigh 1 oz.?

8. If 12 bushels of wheat cost 4*l.* 1*s.* 6*d.*, how much can be bought for 55*l.* 0*s.* 3*d.*?

9. Simplify $\frac{2}{7} \times \frac{1-\frac{2}{7}}{2} + \frac{4}{5} \times \frac{1}{10} + \frac{3}{5}\left(\frac{1}{2}+\frac{11}{14}\right) + \frac{3}{7}\left(\frac{2}{7}+\frac{4}{5}\right)$.

10. Reduce $\frac{5}{7}$ of 5*l.* 19*s.* to the decimal of 3*l.* 12*s.* 11*d.*

11. Divide 6·82 by ·0125. Reduce $\frac{1}{3}\frac{8}{3}\frac{8}{5}$ to a recurring decimal; and express $\frac{2{\cdot}8 \times 11{\cdot}\dot{3}\dot{6}}{5{\cdot}6\dot{8}\dot{1}}$ as a vulgar fraction.

12. Find the present value of 324*l.* 6*s.* $1\frac{1}{4}$*d.* due in 2 yrs. 9 mo. at $3\frac{1}{2}$ per cent.

13. Divide 954*l.* 9*s.* amongst A, B, and C, so that A's share may be to B's share :: 3 : 5, and B's share be to C's share :: 10 : 11.

14. A refiner buys sugar at 25*l.* per ton; the cost of refining is 1*l.* 15*s.* 8*d.* per cwt.; he sells the refined sugar at $5\frac{1}{2}$*d.* per lb.: how much is his gain per cent.?

SENIOR.

15. Simplify $1\frac{7}{8} \times 1\frac{1}{3} \times \frac{1\frac{9}{12}}{1\frac{3}{4}} \times \frac{3\frac{1}{4} - 2\frac{1}{8}}{3\frac{1}{4} + 1\frac{1}{4}} \div 1\frac{4}{7}$.

16. Find the difference between $\frac{5}{11}$ of 78*l.* 16*s.* $2\frac{1}{2}d.$ and 35*l.* 14*s.* $8\frac{1}{4}d. \div 1\frac{2}{3}$.

17. Find (by Practice) the value of 2 tons 5 cwt. 2 qrs. 16 lbs. at 113*l.* 3*s.* 4*d.* per ton.

18. If 4 yds. 2 ft. 6 in. of cloth cost 4*l.* 14*s.* 3*d.*, how much will 5 yds. 3 in. cost?

19. Multiply 1·08 by ·007. Divide 3·12 by 325, and 312 by ·0325; and reduce $\frac{57}{117}$ to a recurring decimal.

20. Express 17 yds. 1 ft. $7\frac{1}{2}$ in. as the fraction of $\frac{1}{2}$ mile; and 1 ton 3 cwt. 14 lbs. as the decimal of 5 tons; and find the value of ·0375 of ·1*l.* + 5·09 of 2*s.* 9*d.*

21. What is the area of a flat roof 17 ft. 4 in. long and 13 ft. 4 in. wide; and what will be the expense of covering it with sheet lead $\frac{1}{16}$ of an inch thick, if one cubic inch of lead weighs $6\frac{1}{2}$ oz. Avoir., and 1 lb. cost $3\frac{1}{3}d.$?

22. Find the simple and compound interest on 112*l.* 10*s.* for 3 years at $3\frac{1}{2}$ per cent.

23. What income does a man obtain by investing 3220*l.* in the Three and a-half per Cents. at $80\frac{1}{2}$? And if this Stock rises to 92, and he then sells out, at what price must he invest in the Four per Cents. so that his income may be increased by 10*l.*?

24. A grocer buys $6\frac{1}{2}$ cwt. of tea at 17 guineas per cwt.; he sells 3 cwt. at 3*s.* 3*d.* per lb., and the remainder at 3*s.* $9\frac{1}{2}d.$ per lb.; what is his gain per cent.?

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9. 1868.—JUNIOR.

1. Subtract Two hundred and forty-three thousand six hundred and one, from Five millions seven hundred thousand and fifty; and multiply the result by twenty-three.

2. Multiply 2035674 by 396; and divide the product by 198.

3. Divide 39*l.* 11*s.* $3\frac{1}{4}d.$ by 19; and how many times does 43*l.* 6*s.* 8*d.* contain 3*l.* 6*s.* 8*d.*?

4. Find, by Practice, the cost of 257 barrels of beer, at 1*l.* 17*s.* 9*d.* per barrel.

5. Make out the following:—$3\frac{1}{4}$ lbs. of tea, at 2*s.* 8*d.* per lb.; $1\frac{1}{2}$ lbs. of coffee, at 1*s.* 8*d.* per lb.; $6\frac{3}{4}$ lbs. of loaf sugar, at 5*d.* per lb.; $\frac{3}{4}$ lb. of butter, at 1*s.* 5*d.* per lb. How much change out of 1*l.* should the purchaser receive?

7. If 3 men can mow 15 acres in $6\frac{2}{3}$ days, how long will 10 men take to mow them?

8. A person buys equal quantities of apples, at the rates of 2 a penny and 3 a penny, and then mixes them. How many may he sell for 5*s.*, so as neither to gain nor lose?

9. I lost $\frac{1}{3}$ of my property in a speculation, and then had 1562*l.* 3*s.* 4*d.* left. How much did I lose, and how much had I at first?

10. Divide 64 by ·08, 6·4 by 80, and ·064 by ·008.

11. Express as vulgar fractions, ·25, ·025, and $\cdot1\dot{2}\dot{7}$.

12. Simplify $\dfrac{1}{1+\dfrac{7}{6\frac{2}{3}}}+\dfrac{7}{13\frac{2}{3}}$.

13. Reduce $2\frac{1}{2}$ gills to the vulgar and decimal fractions of $3\frac{1}{2}$ galls

14. Extract the square root of 502681 and ·0009.

15. What is the value of 40 lbs. of gold, if an ounce be worth 3*l.* 17*s.* $10\frac{1}{2}$*d.*?

16. Find the cost of papering a room 5 yds. 1 ft. $2\frac{1}{2}$ in. long, 5 yds. $3\frac{1}{2}$ in. broad, 4 yds. high, with paper 9 in. wide, at $2\frac{1}{2}$*d.* a yard.

SENIOR.

17. How many pounds are there in 91200 farthings?

18. Divide 3050*l.* 9*s.* $10\frac{1}{2}$*d.* by 81.

19. Find, by Practice, the value of 245 things, at 3*l.* 19*s.* $9\frac{3}{4}$*d.* each; and of 7 cwt. 3 qrs. 26 lbs., at 1*l.* 10*s.* 4*d.* per cwt.

20. Simplify $\dfrac{261}{3103}$; and $\dfrac{3}{8-\dfrac{7}{2-\dfrac{3}{4}}}+\dfrac{5}{6-\dfrac{5}{2-\dfrac{5}{6}}}$.

21. Add together $\frac{2}{3}$ of a crown, $\frac{13}{126}$ of a guinea, $\cdot\dot{3}$ of 18*s.* 6*d.*, and $\cdot41\dot{6}$ of 1*l.*

22. Divide ·024 by 60, 24 by ·006, and 2·4 by ·06.

23. Express, as vulgar fractions, ·375, ·0375, and $\cdot0\dot{1}\dot{0}\dot{9}$.

24. What vulgar fraction, and what decimal fraction, is $1\frac{1}{2}$ ft. of $\frac{1}{4}$ of a mile?

25. Extract the square root of 491961196 and of ·0016.

26. Compare the simple and compound interest on 119*l.* for three years, at 4 per cent?

27. How many sovereigns are there in 80 lbs. of gold, an ounce of gold being worth 3*l.* 17*s.* $10\frac{1}{2}$*d.*?

28. How many planks, each $13\frac{1}{2}$ feet long and $10\frac{1}{2}$ inches wide, are required for a platform 54 yards long and 21 yards broad. What will be the cost at $5\frac{1}{2}$*d.* per square foot?

29. If 5 horses eat 8 bushels $1\frac{3}{4}$ pecks of oats in 9 days, how long will 66 bushels $3\frac{3}{4}$ pecks last 17 horses?

CIVIL SERVICE.

10. 3RD REPORT.—1857.

1. In 23221 grains of gold, how many pounds &c. ?
2. Reduce 2 miles 1 fur. 12 po. 1 ft. 8 in. to inches.
3. Find the income tax on 6150*l.* 10*s.* at 7*d.* in the pound.
4. What weight of sugar may be bought for 93*l.* 12*s.*, when the cost of 6 cwt. 2 qrs. is 27*l.* 14*s.* 8*d.* ?
5. Find the value of 6723 pieces of cloth, each being worth 1*l.* 8*s.* $8\frac{1}{4}$*d.*
6. Find the cost of 4 cwt. 3 qrs. $22\frac{1}{2}$ lbs. at 1*l.* 9*s.* 2*d.* per cwt.
7. Find the simple interest on 291*l.* 13*s.* 4*d.* at $3\frac{3}{4}$ per cent. for 6 yrs.
8. How much will 3500*l.* amount to in 4 years at $4\frac{1}{2}$ per cent. compound interest ?
9. Add together $\frac{3}{4}$, $\frac{5}{7}$, $1\frac{5}{8}$, $2\frac{1}{3}$.
10. Subtract $5\frac{7}{11}$ from $8\frac{1}{2}$.
11. Multiply $9\frac{5}{7}$ by $3\frac{3}{11}$.
12. Divide $6\frac{1}{5}$ by $9\frac{1}{7}$.
13. Add 501·1306, ·96, 6·401302, and 72.
14. Subtract 901·53629 from 30640·48.
15. Multiply 12·403 by ·3016.
16. Divide 91·4 by 9020·4.
17. Divide 4·37 by ·0104.
18. Reduce 1·85 of 3*s.* 4*d.* to the decimal of a guinea.
19. What number, added to $1\frac{7}{10}$, $3\frac{9}{16}$, $2\frac{3}{20}$, $\frac{5}{24}$, will make the total 10?
20. If $\frac{1}{169}$ of $\frac{3}{8}$ of $2\frac{1}{2}$ of 40 lbs. cost $1\frac{3}{50}$*d.*, how many pounds are bought for 1*l.* 6*s.* 6*d.* ?
21. If 3 men can mow 7 acres in 5 days of 9 hours each, in how many days of 8 hours each will 5 men mow 35 acres ?
22. If $2\frac{3}{4}$ lbs. of tea cost 12*s.* 9*d.*, what will $\frac{3}{16}$ of a lb. cost ? (Solve by decimals.)
23. How many yards of matting, 4·8 ft. broad, will cover a floor that is 27·3 ft. long and 20·16 ft. broad ?
24. Extract the square root of $5\frac{3}{9}\frac{1}{2}\frac{1}{5}$.
25. Extract the cube root of 134217728.
26. At what rate per cent. will 1303*l.* 6*s.* 8*d.* amount to 1884*l.* 18*s.* 11*d.* in 7 years ?
27. A person who has 1475*l.* in the 3 per cents. at $75\frac{1}{4}$, transfers it to the 5 per cents. at $110\frac{5}{8}$; what is the alteration in his income ?
28. Find the present worth of 1215*l.* due in 4 years at $5\frac{3}{8}$ per cent.
29. By selling an article for 9*l.* 10*s.*, the seller loses 5 per cent.; what would be his loss or gain per cent. if he sold it for 11*l.* 17*s.* 6*d.* ?
30. If I buy 14 oxen for 157*l.* 5*s.* 10*d.*, and sell 6 at 7*l.* 4*s.* each, for what must the remainder be sold to gain 4 per cent. on the whole ?
31. Reduce 17 tons 13 cwt. 1 lb. to ounces.
32. In 537086 inches, how many miles, furlongs, &c. ?

33. Find the income tax on 17030*l.* 5*s.* at 7*d.* in the pound.

34. What is the tax on a house rented at 327*l.* 12*s.* 6*d.*, if the tax on one rented at 35 guineas is 6*l.* 8*s.* $7\frac{1}{2}d.$?

35. Find the value of 3546 pieces of cloth, each worth 1*l.* 6*s.* $7\frac{3}{4}d.$

36. What must be given for a gold snuff box weighing 11 oz. 19 dwt. 16 grs. at the rate of 4*l.* 3*s.* 9*d.* per oz. ?

37. What is the simple interest on 2245*l.* for 5 years, at $4\frac{3}{4}$ per cent.?

38. Find the amount of 8600*l.* in 4 years, at $5\frac{1}{2}$ per cent. compound interest.

39. Add $\frac{4}{5}$, $\frac{5}{8}$, $4\frac{5}{9}$, $1\frac{7}{10}$.

40. Subtract $6\frac{5}{12}$ from $9\frac{3}{4}$.

41. Multiply $10\frac{3}{7}$ by $3\frac{1}{13}$.

42. Divide $6\frac{5}{9}$ by $8\frac{7}{8}$.

43. Add 70·1046, 701, ·6, ·16, and 7·304.

44. Subtract 87·130563 from 352·61.

45. Multiply 1·342 by ·2057.

46. Divide 91·6 by 8931·61.

47. Divide 43·2 by ·0351.

48. Reduce 3·45 of half-a-guinea to the decimal of half-a-crown.

49. What number, added to $1\frac{7}{11}$, $2\frac{7}{18}$, $3\frac{5}{24}$, $\frac{9}{24}$, will make 10 ?

50. If $1\frac{3}{7}$ of $\frac{5}{40}$ of $1\frac{3}{4}$ of a ton is worth 4*l.* 10*s.*, what is the value of $\frac{3}{5}$ of it ?

51. If 3 men mow 14 acres in 5 days of 9 hours each, in how many days of 10 hours each will 5 men mow 35 acres ?

52. If $2\frac{3}{8}$ lbs. of tea cost 9*s.* 6*d.*, what will $\frac{5}{12}$ of a lb. cost ? (Solve by decimals.)

53. How many yards of matting, $7\cdot\dot{3}$ feet broad, will cover a floor that is $27\cdot\dot{3}$ feet long and 10·083 feet broad ?

54. Extract the square root of $4\frac{2}{3}\frac{1}{8}\frac{8}{9}$.

55. Extract the cube root of 51478848.

56. At what rate per cent. will 1303*l.* 6*s.* 8*d.* amount to 1687*l.* 14*s.* 10*d.* in 10 years ?

57. A person invests 9075*l.* in the 3 per cents. at $90\frac{1}{4}$, and on their rising to 91 transfers it to the $3\frac{1}{2}$ per cents. at $93\frac{1}{2}$; how is his annual income affected ?

58. If oranges be bought at 20 a shilling, how many should be sold for 2*l.* 8*s.*, to gain 40 per cent. ?

59. Find the true present worth of 553*l.* 15*s.* due 2 years hence, at $5\frac{3}{8}$ per cent.

60. A person sells out of the 3 per cents. at 98, and invests his money in railway 5 per cent. stock at par; find by how much per cent. his income is affected.

61. In 32391 ounces of sugar, how many tons &c. ?

62. Reduce 3 weeks 4 days 5 hours 54 minutes to seconds.

63. Find the Income-tax on 7980*l.* 10*s.*, at 7*d.* in the pound.

64. If, by working 9 hours a day, I can finish a piece of work in 12 weeks, how long shall I take to finish it if I work 8 hours a day ?

65. Find the value of 6943 sheep, at 1*l.* 13*s.* $4\frac{1}{2}d.$ each.

66. Find the cost of 7 cwt. 3 qrs. 20½ lbs., at 3*l.* 2*s.* 5*d.* per cwt.

67. Find the simple interest on 588*l.* 6*s.* 8*d.* at 3¼ per cent. for 5 years.

68. How much will 500*l.* amount to in 3 years, at 4½ per cent. compound interest?

69. Add together $3\frac{1}{9}$, $5\frac{3}{8}$, $1\frac{4}{15}$, $\frac{2}{3}$.

70. Subtract $5\frac{3}{7}$ from $7\frac{5}{8}$.

71. Multiply $11\frac{1}{3}$ by $8\frac{4}{7}$.

72. Divide $12\frac{4}{9}$ by $9\frac{3}{5}$.

73. Add together 27·03, 452·0091, ·37, 1·873592, and 83.

74. Subtract 423·79283 from 1857·23.

75. Multiply 5·0103 by 6·503.

76. Divide 84·5 by 3936·2 to 4 places of decimals.

77. Divide 56·64 by ·0107.

78. Reduce 3·285 of 6*s.* 8*d.* to the decimal of a guinea.

79. What number added to $3\frac{2}{3}$, $1\frac{2}{10}$, $2\frac{7}{12}$, $1\frac{8}{15}$, makes 12.

80. If $\frac{1}{14}$ of $3\frac{2}{3}$ of $\frac{7}{9}$ of $5\frac{1}{2}$ of 22 lbs. cost 4¼*d.*, how much will 1 ton 11 cwt. 3 qrs. cost?

81. If I pay 2*s.* for 14 lbs. of bread, when corn is worth 6*s.* a bushel; what must I pay for 31¼ lbs., when corn is at 4*s.* per bushel?

82. If 3⅜ lbs. of tea cost 15*s.* 3*d.*, how many pounds can I buy for 4*l.* 3*s.* 10½*d.*? (By decimals.)

83. A room is 42 feet long, 28 feet broad, and 12 feet high, what will be the cost of covering the walls with a paper 2 feet 3 inches wide, at 9*d.* per yard.?

84. Extract the square root of $33\frac{144}{225}$.

85. Extract the cube root of 12167.

86. In what time will 527*l.* 10*s.* amount to 602*l.* 13*s.* 4½*d.*, at 4¼ per cent. simple interest?

87. If the 3½ per cents. be at 91, how much must I invest in order to have an income of 932*l.* after paying 7*d.* in the pound income tax?

88. Find the present worth of 2674*l.* 6*s.* due in 3 years, at 4⅔ per cent.

89. A grocer buys 3 cwt. of sugar at 5*d.* per lb., and 7 cwt. at 6½*d.*; he sells 5½ cwt. at 5½*d.* per lb.; at what rate per pound must he sell the remainder in order to gain 50 per cent.?

90. A tobacconist mixes together 80 lbs. of tobacco at 14*d.*, 100 lbs. at 20*d.*, 60 lbs. at 4*s.* 10*d.*, and 20 lbs. at 2*s.* 10*d.*; what will be the value of 3 oz. of this mixture?

91. In 86754 oz., how many tons &c.?

92. Reduce 6 miles 5 fur. 7 po. 2 yds. to feet.

93. Find the income tax on 8313*l.* 5*s.* at 7*d.* in the pound.

94. If a bar of gold weighing 7 lbs. 1 oz. 14 dwt. is worth 257*l.* 2*s.* 0*d.*, what is that per oz.?

95. Find the cost of 14 cwt. 3 qrs. 19 lbs. at 5*l.* 16*s.* 8*d.* per cwt.

96. If a person's estate is worth 1384*l.* 16*s.* 0*d.* per annum, and the rent charges amount to 14*s.* 9½*d.* in the pound, what is his income?

97. Find the simple interest on 1248*l.* 12*s.* 0*d.* at 3½ per cent. for 3 years.

98. How much will 8000*l.* amount to in 4 years at 3¼ per cent. compound interest?

99. Add $3\frac{5}{12}$, $3\frac{1}{8}$, $2\frac{7}{16}$, $2\frac{3}{4}$.
100. Subtract $8\frac{3}{7}$ from $18\frac{3}{5}$.
101. Multiply $11\frac{2}{3}$ by $7\frac{1}{3}$.
102. Divide $18\frac{3}{7}$ by $5\frac{1}{7}$.
103. Add 140·17, ·6432, ·07042, and 3·12.
104. Subtract 83·450392 from 1210·3.
105. Multiply 80·46 by ·00392.
106. Divide 37·52 by 2871·3.
107. Divide 507·97 by ·0023.
108. Reduce $7\frac{1}{2}$ guineas to the decimal of 1000*l.*
109. Add $\frac{5}{12}l.$, $\frac{5}{16}$ of 6*s.* 8*d.*, $\frac{1}{10}$ of a crown, and $\frac{3}{12}d.$
110. If $\frac{5}{21}$ of $3\frac{1}{2}$ of $7\frac{3}{5}$ of $\frac{4}{7}$ of 36 lbs. of sugar cost 12*s.* $6\frac{1}{2}d.$, how much will 17 tons 17 cwt. cost?
111. If 12 men dig a trench 15 yds. long and 4 broad, in 3 days of 12 hours each, in how many days of 9 hours each can 8 men dig a trench 20 yds. long and 8 broad?
112. What will be the cost of painting the walls of a room at 1*s.* 7*d.* per square yard, the length being 19 ft. $10\frac{1}{4}$ in., the breadth 16 ft. $1\frac{1}{4}$ in., and the height 10 ft. 3 in.? (By decimals.)
113. A cistern has two pipes; by one it is filled in 20 minutes, and by the other in 25 minutes; it has a discharging pipe by which it is emptied in 18 minutes; if all three were open together, in what time would the cistern be filled?
114. Extract the square root of $514\frac{1}{625}\frac{8}{5}$.
115. Extract the cube root of 228099131.
116. At what rate will 2063*l.* 15*s.* amount to 2249*l.* 9*s.* 9*d.* in $2\frac{1}{2}$ years?
117. A person invests 9075*l.* in the 3 per cents. at $90\frac{3}{4}$, and on their rising to 91, transfers it to the $3\frac{1}{2}$ per cents. at $97\frac{1}{2}$; what increase does he make in his annual income?
118. A person buys teas at 3*s.* and 4*s.* per lb., and mixes them as 4 to 7, what will he gain per cent. by selling the mixture at 4*s.* 2*d.* per lb.?
119. Reduce 3 tons 9 cwt. 2 qrs. 4 lbs. 6 oz. to oz.
120. How many miles, furlongs, &c., are there in 174,082 inches?
121. How many lbs., oz., &c. are there in 228908 grains of gold?
122. Reduce 3 acres 20 poles to square feet.
123. Find the income tax on 7530*l.* 14*s.* $4\frac{1}{2}d.$ at 16*d.* in the pound.
124. If 17 cwt. 3 qrs. 14 lbs. of barley cost 8*l.* 18*s.* 9*d.*, how much is bought for 5*l.* 12*s.* 6*d.*?
125. How much will a creditor lose on a debt of 5342*l.* 5*s.*, when a bankrupt pays only 13*s.* 6*d.* in the pound?
126. A man working $6\frac{1}{4}$ hours a day does a piece of work in 6 days; how many hours per day must he work to do it in 5 days?
127. Find the value of 3107 sheep, each being worth 1*l.* 14*s.* $7\frac{1}{2}d.$
128. Find the dividend on 3762*l.* 10*s.* at 8*s.* $2\frac{1}{2}d.$ in the pound.
129. Find the value of 14 oz. 8 dwt. 20 grs. of gold at 3*l.* 17*s.* 6*d.* per oz.
130. What will the painting of a room cost at 2*s.* 3*d.* the sq. yard, whose height is 10 ft., width 15 ft., and length 19 ft.?

131. The populations of five parishes being 1236, 452, 364, 516, and 3430 respectively, find what the population of a sixth parish must be, that the average population of the six may be 1256·5.

132. A person has $\frac{1}{4}$ of a ship worth 3484*l.*, which is insured for 91$\frac{1}{2}$ per cent. of its value; what would he lose if the ship were lost?

133. The populations of three towns in the year 1841 were 21,326, 42,324, and 6706; and in the year 1851 it was found that the first two had increased 12 and 10 per cent. respectively, and the last decreased 18 per cent.; find the average population in the year 1851.

134. If a person sells 22 articles for the same money which he paid for 36, what does he gain per cent.?

135. By selling tea at 5*s.* 4*d.* per pound, a grocer clears $\frac{1}{8}$th of his outlay; he then raises the price to 6*s.* 2*d.*; what does he then clear per cent.?

136. A person sells out of the Three per Cents. at 96, and invests in railway 5 per cent. stock at 106*l.* 13*s.* 4*d.*; find how much per cent. his income is increased.

137. Find the average of 13, 27, 0, 46, 72, 86 decimally.

138. The populations of three towns in 1841 were 20,325, 41,304, and 6117; and in 1851 they had increased respectively 9, 10, and 12 per cent.; find the average population in 1851.

139. If goods bought at 2*l.* 5*s.* 10*d.* per cwt. be sold at 2*l.* 11*s.* 4*d.*, what is the gain per cent.?

140. What is the premium upon a policy of assurance for 6417*l.* 14*s.* 2*d.* at 2*l.* 12*s.* per cent.?

141. If by selling an article at 1*l.* 1*s.* 9*d.* per pound, I gain 16 per cent., what was its prime cost?

142. A grocer buys 3 cwt. of sugar at 5*d.* per lb., and 7 cwt. at 6$\frac{1}{2}$*d.*; he sells 5$\frac{1}{2}$ cwt. at 5$\frac{1}{2}$*d.* per lb.; at what rate per lb. must he sell the remainder to gain 50 per cent. on his whole outlay?

143. When the Three per Cents. are at 91$\frac{3}{4}$, find how much can be bought for 540*l.*, allowing for commission $\frac{1}{4}$ per cent.

144. A person sells out of the Three per Cents. at 96, and invests in railway 5 per cent. stock at par; find how much per cent. his income is increased?

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11. 4TH REPORT.—1859.

1. In 523,769 grains, how many lbs. oz. dwt.?

2. Reduce 3 acs. 20 rods 12 yds. 7 ft. to feet.

3. If the yearly profits of an investment be 11*l.* 9*s.* 6*d.* per cent., how much must be invested to produce an annual return of 640*l.* 13*s.* 9*d.*?

4. If a pocket of hops weighing 1 cwt. 3 qrs. 12 lbs. cost 7*l.* 13*s.*; what is the price per cwt.?

5. Find the cost of 75 cwt. 1 qr. 16 lbs. of sugar at 2*l.* 4*s.* 11*d.* per cwt.

6. A bankrupt owes 25,962*l.* 10*s.*; what must his assets be to pay 7*s.* 11$\frac{1}{2}$*d.* in the pound?

7. Find the simple interest on 1923*l.* 15*s.* for 2 years 8 months at $3\frac{3}{4}$ per cent.

8. Find the amount of 4800*l.* in 3 years at $3\frac{1}{2}$ per cent., compound interest.

9. Add together $7\frac{1}{2}$, $\frac{3}{14}$, $\frac{10}{21}$, and $2\frac{1}{3}$.

10. Subtract $5\frac{6}{35}$ from $7\frac{4}{5}$.

11. Multiply $22\frac{3}{11}$ by $4\frac{3}{8}$.

12. Divide $19\frac{2}{7}$ by $4\frac{3}{8}$.

13. Add together 42·79, ·2105, ·047, and 140.

14. Subtract 42·946 from 161·06.

15. Multiply 65·43 by ·00376.

16. Divide 39·49 by 13·476.

17. Divide 154·28 by ·0064.

18. Reduce 2 fur. 11 yds. 1 ft. 9 in. to the decimal of a mile.

19. If 56 ft. 1044 in. of timber are required to floor a room 29 ft. 3 in. by 25 ft. 4 in.; what is the thickness of the boards?

20. A tradesman starts with a capital of 960*l.*, and after 3 years takes a partner with 2,100*l.*; after 4 years more the profits amount to 2,304*l.* How ought this to be divided?

21. Extract the square root of 2854·7649.

22. Extract the cube root of 1194389981.

23. Multiply, by the method of duodecimals, 6 ft. 7 in. 5 parts by 8 ft. 3 in. 10 parts.

24. Express the result in sq. ft., sq. in., and a fraction of a sq. in.

25. A tradesman's annual losses during 5 years average $1\frac{1}{4}$ per cent. on the capital with which he began, and at the end of the 5 years his effects are worth 2531*l.* 5*s.*; what capital did he begin with?

26. A person sells out of the 3 per cent. consols at 99, and invests in exchequer bills, bearing interest at the rate of $2\frac{1}{2}d.$ a day per cent., when the bills are at a premium of 7*s.* 6*d.* What effect has this on his income?

27. In the month of December, the number of paupers in an union was 336, of women double that of the men, and children as many as the men and women together. If a man cost $\frac{1}{3}$ more than a woman, and 3 children as much as a man and a woman together, and the whole cost for the month be 83*l.* 6*s.*, how much is the daily cost of each man, woman, and child?

28. In 1858 the value of 100*l.* tithe rent charge, reckoned on the average price of corn in the 7 years preceding, was 105*l.*; in 1859, reckoned in the like way, it is 3 per cent. more; if it were reckoned on the price in 1851 only, it would be but 69*l.* What would it be if reckoned on the price in 1858 only?

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12. 6TH REPORT.—1860.

1. Write down in figures—Six hundred and three thousand and fifty.

2. Write down in figures—Seven millions three thousand and forty.

3. Write down in figures—Eight thousand million one thousand and two.

4. Add together — 75053079, 344515, 4477896, 81390045, 78963412, and 6547885.

5. Add together — 2917*l.* 10*s.* 2½*d.*, 27*l.* 1*s.* 2½*d.*, 533*l.* 7*s.* 6¼*d.*, 4456*l.* 8*s.* 9*d.*, 5001*l.* 17*s.* 8¾*d.*, and 7*l.* 8*s.* 9*d.*

6. From 256714894 take 93553760.

7. From 87341*l.* 10*s.* 9½*d.* take 6742*l.* 19*s.* 11¾*d.*

8. Multiply 92078025 by 407.

9. Multiply 98703542 by 700706.

10. Multiply 4693*l.* 10*s.* 10¾*d.* by 8.

11. Multiply 6842*l.* 15*s.* 8½*d.* by 89.

12. Divide 846123998776 by 7.

13. Divide 630762540981 by 652.

14. Divide 2678492*l.* 15*s.* 6*d.* by 18.

15. Divide 3496852*l.* 19*s.* 5½*d.* by 94.

16. A sum of 10465*l.* was divided between two persons, so that one had 547*l.* 10*s.* more than the other; what did each receive?

17. If a man rows at the rate of 7 miles an hour with the stream, whose rate is 2½ miles, how fast will he row against it?

18. A person mixed 8 lbs. of tea at 3*s.* 6*d.*, 10 at 3*s.* 8*d.*, 12 at 4*s.* 2*d.*, and 10 at 4*s.* 6*d.*, and sold the mixture at 4*s.* 8*d.* per lb.; what did he gain?

19. Reduce 16 tons 4 cwt. 3 qrs. 15 lbs. 13 oz. to ounces.

20. In 29336935 seconds, how many weeks, days, &c.?

21. Reduce 13 miles 5 fur. 9 po. 3 yds. to inches.

22. In 340103 grains (Troy weight), how many lbs., oz., &c.?

23. Reduce 13 yds. 5 ft. 19 in. (cubic measure) to inches.

24. In 569705 sq. feet, how many acres, roods, perches?

25. If a train going 25 miles an hour performs a distance in 4½ hours, how long would a train going 30 miles an hour take?

26. If 5 gals. of oil cost 18*s.* 4*d.*, find the cost of 13 gals. 3 qts. 1 pt.

27. What is the income corresponding to an income tax of 108*l.* 1*s.* 4½*d.* at 9*d.* in the pound?

28. A person who values his property at 3500*l.* insures half at 5*s.* 6*d.* per cent., and half at 4*s.* 6*d.*; what does it cost him?

29. If it cost 18*l.* 5*s.* 9*d.* to carpet a room 22 ft. long and 19 ft. wide, how much will one cost for a room 27 ft. by 16 ft.?

30. If the carriage of 21 cwt. for 40 miles costs 11*s.* 8*d.*, find the cost of carrying 7 cwt. for 174 miles.

31. Find the dividend on 2574*l.* 15*s.* at 13*s.* 5*d.* in the pound.

32. Find the price of 13 cwt. 3 qrs. 11 lbs. of sugar at 2*l.* 6*s.* 8*d.* per cwt.

33. Find the price of 17 ac. 3 rds. 15 per. at 37*l.* 10*s.* per acre.

34. Find the value of 105 pockets of hops, each weighing 1 cwt. 1 qr. 8 lbs. at 4*l.* 12*s.* 6*d.* per cwt.

35. Find the cost of papering a room, whose height is 12 ft., width 16 ft., and length 20 ft., at 2¼*d.* the square yard.

36. Find the cost of carpeting a room 25 ft. long by 20 ft. wide, the price of a yard of carpet 2 ft. 6 in. wide being 4*s.* 3*d.*

37. Reduce 13 yds. 7 ft. 19 in. (sq. measure) to inches.

38. In 15346907 oz. how many tons, cwt., &c.?

39. If 3 bush. of wheat cost 16*s.* 9*d.*, find the price of 12 qrs. 2 bush. 1 pk.

40. Find the income corresponding to an income tax of 50*l.* 7*s.* 1*d.* at 5*d.* in the pound.

41. Find the cost of making a road, length 9 miles 5 fur. 44 yds., at 25*l.* 8*s.* 4*d.* per mile.

42. Find the value of 15 silver plates, each weighing 7 oz. 11 dwts. 6 grs., at 6*s.* 8*d.* per ounce.

43. Find the simple interest on 4164*l.* 10*s.* for 6 years at $2\frac{1}{4}$ per cent.

44. Find the amount of 7000*l.* in 4 years at 5 per cent. comp. interest.

45. Add together $5\frac{4}{9}$, $\frac{3}{8}$, $\frac{7}{12}$, and $2\frac{5}{24}$.

46. Subtract $11\frac{7}{15}$ from $16\frac{2}{15}$.

47. Multiply $42\frac{2}{3}$ by $\frac{10}{27}$.

48. Divide $2\frac{4}{15}$ by $4\frac{1}{7}$.

49. Add together 3·406, ·0212, 47·9, and ·6.

50. Subtract 16·498 from 503·12.

51. Multiply 32·5 by ·0763.

52. Divide 493·7 by 1·59.

53. Divide ·18 by ·004.

54. Reduce ·06 of 4·2 of a guinea to the decimal of a pound.

55. Reduce $\cdot 60\dot{1}2\dot{4}3$ to a vulgar fraction.

56. Add $\frac{4}{7}$ of $\frac{3}{5}$ of $4\frac{5}{15}$ of a furlong to ·05 of $\cdot 0\dot{6}$ of a mile.

57. Extract the square root of 13104400.

58. Extract the cube root of 586376253.

59. Two persons having each a capital of 12,000*l.*, one invests in the 3 per cent. Consols at $90\frac{3}{4}$, the other in railway shares paying 5 per cent. at $103\frac{3}{4}$; find the difference in incomes.

60. If when wheat is 60*s.* a quarter, the 6*d.* loaf weigh 4 lbs., how much should be paid for 25 lbs. of bread when wheat is 40*s.* a quarter?

61. Find the cost of papering a room 16 ft. long, 11 ft. wide, and 10 ft. high, with paper 30 inches broad, at $7\frac{1}{2}$*d.* a yard.

62. Multiply, by duodecimals, 7 ft. 5 in. 8 pts. by 9 ft. 4 in. 11 pts.

63. Express the result in square inches and a fraction.

64. The expense attending the production of a book, the retail price of which is 7*s.* 6*d.*, is 2*s.* $4\frac{1}{2}$*d.*; the publisher allows the bookseller 25 per cent. on the retail price, and gives 13 copies to the dozen; 3900 copies are printed and sold; the author is to have half the profits; how much will he receive?

65. Reduce 17 lbs. 6 oz. 12 dwts. 7 grs. to grains.

66. In 5792685 inches, how many miles, &c

67. If 16 napoleons are worth 12*l.* 14*s.* 8*d.*, what is the value of 105?

68. A rate of 1*s.* 5*d.* in the pound is levied in a parish where the rental is 360817*l.* 10*s.*; find the amount.

69. Find (by Practice) the value of 70 bales of cotton, each weighing 1 cwt. 1 qr. 21 lbs., at 2*l.* 3*s.* $1\frac{1}{2}$*d.* per cwt.

70. Find (by Practice) the value of 3 ac. 1 rd. 14 po. at 125*l.* per acre.

71. Find the simple interest on 2175*l.* 10*s.* for 3 years at $4\frac{1}{2}$ per cent.

72. Find the amount of 7000*l.* in 4 years at 3 per cent. comp. interest.
73. Add $7\frac{1}{8}$, $\frac{2}{3}$, $3\frac{1}{4}$, $1\frac{1}{12}$.
74. Add $\frac{3}{4}$, $2\frac{5}{6}$, $2\frac{1}{8}$, $\frac{5}{12}$.
75. Subtract $1\frac{7}{9}$ from $5\frac{3}{4}$, and $6\frac{2}{3}$ from $17\frac{1}{4}$.
76. Multiply $19\frac{5}{8}$ by $3\frac{8}{17}$, and $9\frac{1}{3}$ by $5\frac{1}{4}$.
77. Divide $4\frac{2}{3}$ by $6\frac{7}{18}$, and $7\frac{1}{7}$ by $4\frac{8}{51}$.
78. Add 52·38, 367·4, ·172, and 6·0053.
79. Add 672·5, 4·923, 80, and ·076.
80. Subtract 236·932 from 270·00086.
81. Multiply 9·436 by 67·49.
82. Multiply 4·81 by ·0074.
83. Divide 274·6 by 3·672, 89·2 by ·0521, and 16 by ·0004.
84. Reduce $\frac{3}{5}$ of 17*s.* 6*d.* to the decimal of a guinea.
85. Find the value of ·68125*l.*
86. Extract the cube root of 408518488.
87. If 84 acres are mown by 7 men in 12 days of $8\frac{1}{4}$ hours, how many can be mown by 30 men in 11 days of $7\frac{1}{3}$ hours?
88. A person sells 6000*l.* 3 per Cent. Consols at $92\frac{1}{4}$, and invests this sum in railway stock paying $5\frac{1}{2}$ per cent. at $103\frac{1}{8}$; find how his income is affected.
89. Multiply, by the method of duodecimals, 2 ft. 7 in. 11 parts by 3 ft. 5 in. 7 parts.
90. Reduce $\cdot 26\dot{1}53846\dot{}$ to a vulgar fraction.
91. If, by selling goods for 272*l.*, I lose 15 per cent.; how much per cent. should I have lost or gained if I had sold them for 320 guineas?
92. Supposing that in England gunpowder is made of 75 parts of nitre, 10 of sulphur, and 15 of charcoal; in France, of 77 of nitre, 9 of sulphur, and 14 of charcoal; if a ton of each be mixed, what weight of nitre, sulphur, and charcoal will there be in the compound?
93. By a reduction of the interest on Exchequer Bills from $2\frac{1}{2}d.$ to $1\frac{1}{8}d.$ per cent. per day, a person loses at the rate of 152*l.* 7*s.* 9*d.* per annum; what amount of Exchequer Bills does he hold?
94. Find the average of $17\frac{1}{2}$, $25\frac{1}{4}$, $96\frac{3}{8}$, 10, 0, $42\frac{3}{4}$, 56.
95. In an office there is one person receiving 2000*l.*, two who receive 1100*l.* each, six who receive 400*l.*, 12 who receive 200*l.* each, and 18 who receive 90*l.* each; what is the average income?
96. A ship valued at 14500*l.* is insured at 3*l.* 10*s.* per cent., and her cargo valued at 32000*l.* at 5*l.* per cent.; find the cost of insurance.
97. An army lost 18 per cent. by disease, then 14 per cent. of the remainder in battle; the number then was 84624; of how many did the army originally consist?
98. A person sells 5000*l.* Consols at $94\frac{7}{8}$, and on their rising he sells 5000*l.* more at $95\frac{3}{8}$; on their again rising, he buys back the whole 10000*l.* at 96. What does he lose?
99. The present prices of the 3 per Cent. Consols and Midland Railway Stock paying $5\frac{1}{2}$ per cent. are $95\frac{3}{4}$ and $108\frac{1}{2}$; compare the rates of interest.
100. In 1841 the population of Great Britain was 21476000, and that of Ireland was 7310000; in 1851, the former had increased 8·45

per cent., and the latter had decreased 12·5 per cent.; find the increase per cent. in the population of the whole kingdom.

101. Reduce 42 mls. 5 fur. 13 pls. to inches.

102. In 36845371 oz., how many tons, cwt., &c.?

103. If 6 cwt. cost 9*l.* 6*s.*; what is the value of 18 cwt. 1 qr. 21 lbs.?

104. Find what is the income of a person who pays an income tax of 77*l.* 1*s.* 3¾*d.* when the rate is 10*d.* in the pound.

105. Add together $\frac{4}{5}$, $\frac{7}{8}$, $\frac{11}{12}$, $3\frac{3}{10}$.

106. Subtract $19\frac{7}{9}$ from $32\frac{2}{3}$.

107. Multiply $161\frac{1}{2}$ by $2\frac{3}{4}$.

108. Divide $15\frac{6}{13}$ by $7\frac{2}{3}$.

109. Add together 1·4693, ·001, ·6, and 321·2.

110. Subtract 3·901 from 6·01.

111. Multiply 6·4073 by ·42.

112. Divide 240·13 by 73·4.

113. Divide ·0045 by ·03.

114. Reduce 12 cwt. 1 qr. 7 lbs. to the decimal of a ton.

115. Find the value of ·05 of ·06 of a mile.

116. Extract the cube root of 946966168.

117. Extract the square root of 13104400.

118. A person sells 8000*l.* 3 per Cent. Consols at 92, and invests the proceeds in railway shares paying 5 per cent. at 102; how much is his income increased?

119. A merchant buys 15 doz. of port at 82*s.* per doz., and 60 doz. more at 50*s.* per doz.; he mixes them, and sells the mixture at 70*s.* per doz.; what profit per cent. does he realize?

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13. 8TH REPORT.—1862.

1. Write down in figures—Four hundred and one thousand three hundred and one; and

2. Two hundred millions eight thousand and eleven.

3. Write out in words the number 90,105,003.

4. Add together — 10099003, 10584769, 86537981, 12569921, 969789, and 2694153.

5. Add together—5322*l.* 9*s.* 5½*d.*, 304*l.* 12*s.* 3¾*d.*, 6736*l.* 9*s.*10*d.*, 8713*l.* 8*s.* 10½*d.*, 917*l.* 3*s.* 6¾*d.*, and 4831*l.* 2*s.* 11½*d.*

6. From 200175685 take 181589478.

7. From 30709*l.* 14*s.* 2½*d.* take 27876*l.* 16*s.* 7¼*d.*

8. Multiply 5301201 by 57023.

9. Multiply 429772 by 370010.

10. Multiply 4288*l.* 6*s.* 4¾*d.* by 7.

11. Multiply 3509*l.* 1*s.* 2½*d.* by 39.

12. Multiply 4156*l.* 11*s.* 6½*d.* by 620.

13. Divide 573747025786 by 5.

14. Divide 697457274930 by 341.

15. Divide 107107648961 by 5037.

16. Divide 26820761*l.* 2*s.* 6*d.* by 12.

17. Divide 3059678*l.* 17*s.* 1*d.* by 133.

18. In 2306090 oz., how many tons, cwt., &c. ?
19. A ton of potatoes cost 7*l.*; what is the cost of 24 lbs. ?
20. Find (by Practice) the dividend on 1740*l.* 5*s.* at 14*s.* 2*d.* in the £.
21. In 6 fur. 4 po. 5 yds. 2 ft., how many inches ?
22. A man walks 17 miles 1650 yds. in 3 hrs. 45 min.; what is his rate per hour ?
23. Find (by Practice) the price of 9 qrs. 2 bush. 1 pk. at 2*l.* 16*s.* 8*d.* per quarter.
24. Reduce 600 half-guineas to half-crowns.
25. A bankrupt pays 6*s.* 8*d.* in the pound; what is the loss of a creditor to whom he owes 750*l.* ?
26. Find (by Practice) the rent of 23 ac. 3 rds. 15 per. at 1*l.* 13*s.* 4*d.* per acre.
27. How many lbs. oz. &c. are there in 721572 grs. of gold ?
28. A ton of potatoes cost 7*l.*; how many lbs. might be bought for 3*s.*?
29. Find (by Practice) the dividend on 1430*l.* 12*s.* at 13*s.* 4*d.* in the £.
30. Find the simple interest on 435*l.* 15*s.* for 2 years at 2½ per cent.
31. Add $8\frac{1}{7}$, $\frac{9}{14}$, $4\frac{5}{91}$, and $2\frac{17}{26}$.
32. Subtract $3\frac{4}{45}$ from $8\frac{1}{30}$.
33. Multiply $9\frac{9}{11}$ by $4\frac{1}{8}$.
34. Divide $72\frac{1}{8}$ by $7\frac{1}{4}$.
35. Add ·813, 420·91, ·00093, 7·043, and 12560.
36. Subtract 59·87 from 506·222.
37. Multiply 757·04 by 15·8.
38. Divide 22·097 by 543·14.
39. Find the value of 2·625*l.*
40. In 5864542 inches, how many miles furlongs &c. ?
41. If a horse trots $23\frac{3}{4}$ miles in 2½ hours, what is his rate per hour ?
42. Find (by Practice) the cost of 7 oz. 14 dwts. 21 grs. of gold at 2*l.* 13*s.* 4*d.* per ounce.
43. Find the amount of 2700*l.* for 4 yrs. at 3½ per cent. comp. interest.
44. Add together $12\frac{1}{9}$, $\frac{7}{15}$, $\frac{47}{60}$, $\frac{7}{45}$.
45. Subtract $\frac{1}{25}$ from $4\frac{3}{275}$.
46. Multiply $18\frac{3}{4}$ by $1\frac{1}{15}$.
47. Divide $1\frac{7}{12}$ by $8\frac{1}{7}$.
48. Add 50004, ·46, ·579, and 1201·043.
49. Subtract 19·9876 from 75.
50. Multiply 45·267 by 7·045.
51. Divide 15·96 by ·065.
52. Reduce 18*s.* 8½*d.* to a decimal of 2*s.* 2*d.*
53. Reduce 5 ac. 13 po. to square feet.
54. If $4\frac{1}{2}$ cwts. of sugar cost 21 guineas, what cost $195\frac{1}{4}$ lbs. ?
55. Find (by Practice) the price of 34 cubic yards 3 ft. 288 in. of earth, at 3*l.* 6*s.* 9*d.* per yard.
56. In what time will 2220*l.* be doubled at 6 per cent. simple interest?
57. Add together $\frac{7}{16}$, $6\frac{5}{48}$, $\frac{17}{36}$, and $\frac{13}{24}$.
58. Subtract $7\frac{14}{33}$ from $11\frac{3}{44}$.
59. Multiply $\frac{18}{25}$, $11\frac{1}{2}$, and $3\frac{21}{88}$.
60. Divide $7\frac{7}{11}$ by $3\frac{3}{55}$.

61. Add ·2764, 1824, 176·09032, and ·47.
62. Subtract 7·20147 from 872·70032.
63. Multiply 7·045 by 974·01.
64. Divide 1·765 by 2470.
65. Reduce 1*s.* 2*d.* to the decimal of 12*s.* 8½*d.*
66. In 3 lbs. 10 oz. 4 dwt. 12 grs., how many grains Troy?
67. How many acres will 34 men reap in the time that 10 men reap 23 acres?
68. Find (by Practice) the cost of 2 cwt. 1 qr. 10½ lbs. of soap at 3*s.* 9*d.* per stone.
69. Find the simple interest on 73*l.* 5*s.* 6*d.* for 5 yrs. 6 mo. at 3½ p. ct.
70. Add together $\frac{1}{2}$, $\frac{7}{12}$, $\frac{5}{6}$, and $\frac{4}{5}$.
71. Subtract $\frac{33}{50}$ from $1\frac{5}{12}$.
72. Multiply $\frac{3}{14}$ by $\frac{28}{27}$.
73. Divide $\frac{51}{120}$ by $\frac{7}{12}$.
74. Add 802·573, 31·095, 9·7235, and ·507.
75. Subtract 11·709 from 12·0954.
76. Multiply 34·742 by 3·25.
77. Divide 169·24 by 549.
78. Find the value of 2·0875 of 1*l.*
79. In 2771443 seconds, how many weeks days &c.?
80. A fortress is provisioned for 3 weeks at the rate of 15 oz. a day for each man; if only 10½ oz. are served out daily, how long can the place hold out?
81. Find (by Practice) the amount of a man's wages for 3 weeks 4 days 8 hours at 6*s.* 8*d.* a day, reckoning 10 hours to a day.
82. Find the amount of 2700*l.* for 4 yrs. at 6 per cent. comp. interest.
83. Add $\frac{1}{12}$, $5\frac{1}{15}$, $\frac{2}{3}$, and $4\frac{5}{16}$.
84. Subtract $5\frac{1}{12}$ from $8\frac{1}{14}$.
85. Multiply $20\frac{5}{7}$ by $1\frac{1}{33}$.
86. Divide $2\frac{1}{15}$ by $4\frac{1}{2}$.
87. Add ·0241000, ·00565, and 2·432.
88. Subtract ·099095 from 1·007.
89. Multiply ·51904 by 60·504.
90. Divide 24·1 by ·0025.
91. Reduce 2*l.* 11*s.* 6¾*d.* to the decimal of 1*l.* 10*s.*
92. If by selling wine at 15*s.* a gallon I lose 10 per cent., at what price must I sell it to gain 15 per cent.?
93. Find the cube root of 134217728.
94. Multiply ·0021 by 48·026.
95. The content of a cistern is the sum of 2 cubes, whose edges are 10 and 2 inches, and the area of its base is the difference of 2 squares whose sides are 1½ and 1⅔ ft. Find its depth.
96. If a man rows 10 miles in 2½ hours against a stream whose rate is 3 miles an hour, how long would he be in rowing 5 miles with the stream?
97. What must be the rate of interest so that the discount on 1936*l.* 18*s.* payable in 3 years may be 207*l.* 10*s.* 6*d.*?
98. If 48 pioneers, in 5 days of 12½ hours long, can dig a trench of

139·75 yds. long, $4\frac{1}{2}$ yds. wide, and $2\frac{1}{2}$ yds. deep; how many hours per day must 90 pioneers work, during 42 days, to dig a trench $4910\frac{1}{16}$ yds. long, $4\frac{7}{8}$ yds. wide, and $3\frac{1}{2}$ yds. deep?

99. If a steamer makes the passage from New York to Liverpool (say 2760 miles) in 9 days 14 hours; and a train goes from London to Edinburgh (say 405 miles) in 18 hours. Compare their rates.

100. Find the square root exactly of $2515\frac{284}{361}$.

101. Extract the cube root of 5·78 to three places.

102. Multiply by duodecimals 3 ft. 1 in. 11 pts. by 2 ft. 6 in. 7 pts., and the product by 1 ft. 7 in.

103. Express this result in cubic ft. and in. and a fraction of an in.

104. Divide 4·03 by ·1407.

105. Find the average of $21\frac{3}{4}$, $73\frac{4}{5}$, 0, 3·065, 82, $17\frac{3}{10}$, $5\frac{1}{4}$, $9\frac{5}{12}$ (express the fractional part decimally).

106. A person sells as many Three per Cent. Consols at $98\frac{5}{8}$ as produce 2000*l.*, and invests the sum in railway stock, paying $4\frac{1}{4}$ per cent., at $93\frac{1}{4}$. How is his income affected?

107. A person buys coffee at 5*l.* 12*s.* 6*d.* per cwt., and chicory at 2*l.* 5*s.* 5*d.* per cwt., and mixes two of chicory to five of coffee; he retails the mixture at 1*s.* 3*d.* per lb.: what is his gain per cent.?

108. Find the discount on 512*l.* 15*s.* 3*d.*, due 52 days hence, at $2\frac{1}{2}$ per cent. a day.

109. If 5 men can perform a piece of work in 12 days of 10 hours each; how many men can do a piece of work, four times as large, in $\frac{1}{2}$ part of the time, supposing that 2 of the second do as much in an hour as 3 of the first?

110. A canal 10 miles long is 8 yds. wide at the top, 6 yds. wide at the bottom, and 5 ft. deep. How soon would the excavation of it be completed by 800 men, each removing 15 cubic yds. per day?

111. The rate of a clock is ·0375 per cent. too fast. How much will the clock gain in a week?

112. A vessel, whose speed was $9\frac{1}{2}$ miles per hour, started at 8 o'clock to go 74 miles. A second, whose speed was to that of the first as 8 to 5, starting from the same place, arrived 5 minutes before the first. When did the second vessel start?

113. At a siege, it was found that a certain length of trench could be dug by the soldiers and navvies in 4 days, but that when only half the navvies were present, it required 7 days to dig the same length. What proportion was done by the soldiers?

114. Find the average of $13\frac{1}{2}\frac{1}{3}$, 21, $7\frac{3}{4}$, ·0023, $3\frac{1}{8}$, 0, $106\frac{1}{2}$, and $57\frac{7}{10}$ (express the fractional part decimally).

115. If, by selling wine at 15*s.* a gallon, I lose 6 per cent.; at what price must I sell it to gain $17\frac{1}{2}$ per cent.?

116. Of 32 candidates for the East Indian Civil Service in 1859, 3 were above 20 years when they went to India, 4 above 21, 12 above 22 and 23 respectively, and 1 above 24. Find their average age.

117. A merchant has teas worth 4*s.* 6*d.* and 3*s.* 6*d.* per lb. respectively, which he mixes in the proportion of 3 lbs. of the former

to 2 lbs. of the latter, and sells the mixture at 4*s.* 4*d.* per lb. What does he gain or lose per cent.?

118. Between the years 1841 and 1851, the population of England increased 14·2 per cent. In the latter year, it was 21,121,290. What was it in the former year?

119. A person invests 5460*l.* in the 3 per Cents. at 91; he sells out 2000*l.* stock when they have risen to 93½, and the remainder when they have fallen to 85; he then invests the produce in 4½ per Cents. at 102. What is the difference in his income?

120. What must be the value of 6 per cent. stock in order that, after deducting a tax of 10*d.* in the pound, it may yield 6½ per cent.?

121. If the Roman Catholics are 3 to 1 of the population of Ireland, and the Protestant Dissenters are as 2 to 3 to the members of the Established Church; find the proportion per cent. which the Protestant Dissenters bear to the Roman Catholics.

122. When a 3½ per cent. stock is at 93; find what price a 4½ per cent. stock must bear, that an investment may be made in it with equal advantage.

123. A person sells Midland stock, paying 6½ per cent., at 128½, and invests in Great Western stock, paying 3 per cent., at 72½. By how much per cent. will the interest of his investment be altered?

124. A person invests 5000*l.* in the new 6 per Cent. Turkish loan, issued at 68 per cent., at 2½ premium. How much stock will he have, and what is the rate of interest?

125. What must be the market value of 3 per Cent. stock in order that, after deducting an income tax of 10*d.*, it may yield 3½ per cent.?

126. If £3 = 20 thalers, 25 thalers = 93 francs, 27 francs = 5 scudi, and 62 scudi = 135 gulden; how many gulden = £1?

127. A trader in London owes a debt of 1000 pistoles to one in Cadiz; find what he gains by sending it to him through France, the exchanges being £1 = 25·4 francs, 19 francs = 1 Spanish pistole, 4 pistoles = £3.

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14. 11TH REPORT.—1865.

1. In 3,660,607 grains of gold; how many lbs. oz. &c.?

2. If 3 cwt. 69 lbs. cost 14*l.* 3*s.* 6*d.*; how much may be bought for 23*l.* 12*s.* 6*d.*?

3. Find (by Practice) the cost of 3 oz. 16 dwts. 15 grs. of gold at 2*l.* 10*s.* per ounce.

4. Reduce 4 ac. 3 rds. 16 pls. to square feet.

5. If the net income of an estate be 267*l.* 7*s.* 6*d.*, and the gross income is 285*l.* 4*s.*; how much in the pound do the taxes amount to?

6. Find (by Practice) the price of 6 cwt. 3 qrs. 14 lbs. at 2*l.* 5*s.* 6*d.* per cwt.

7. In 4,483,007 seconds; how many weeks days &c.?

8. What is the income of a person who loses 84*l.* 7*s.* 6*d.* a year, by an increase of the income tax from 7*d.* to 9*d.* in the pound?

9. Find (by Practice) the rent of 5 ac. 1 rd. 13 per. at 80*s.* per ac.

10. In 1,000,000 cubic inches; how many yards?
11. If 7 bush. 2 pks. cost 3*l.* 5*s.* 5*d.*; how much will $1\frac{1}{2}$ bush. cost?
12. Find (by Practice) the wages of a man for 3 wks. 2 dys. 11 hrs. at 36*s.* a week, reckoning 6 days to a week, and 12 hours to a day.
13. In 4005201 grs. troy, how many lbs. oz. &c. ?
14. If two tons and a half of coals cost 3*l.* 2*s.* 6*d.*; what cost $1\frac{1}{2}$ cwt.?
15. Find (by Practice) the price of 3 qrs. 2 bush. 1 gal. of corn at 2*l.* 13*s.* 4*d.* per quarter.
16. Find the simple interest of 333*l.* 10*s.* for 20 years at $3\frac{1}{4}$ per cent.
17. Add $\frac{1}{8}$, $\frac{7}{64}$, $\frac{3}{16}$, and $\frac{1}{2}$.
18. Subtract $\frac{2}{17}\frac{4}{7}$ from $2\frac{1}{3}$.
19. Multiply $\frac{3}{15}$ by $3\frac{3}{17}$.
20. Divide $\frac{7}{95}$ by $5\frac{1}{5}$.
21. Add 407·330719, ·000093, ·02, ·400, and ·005.
22. Subtract 3·070101 from 37·005.
23. Multiply 7840·6 by 20·471.
24. Divide 7·012 by 61·25.
25. Find the value of 2·003125 of 8*l.*
26. In 4533206 inches, how many miles, &c.?
27. If 9 men build a wall 48 ft. long and 24 ft. high in 5 days, what will be the length of a wall built by them 8 ft. in height?
28. Find (by Practice) the price of 7 oz. 13 dwt. 15 grs. of gold at 3*l.* 10*s.* per ounce.
29. Find the amount of 10*l.* in 4 yrs. at $4\frac{1}{2}$ per cent. comp. interest.
30. Add together $\frac{5}{8}$, $\frac{5}{8}\frac{6}{3}\frac{0}{3}$, and $\frac{1}{3}\frac{3}{1}\frac{3}{0}$.
31. Subtract $\frac{1}{4}\frac{1}{0}\frac{1}{0}$ from $3\frac{3}{8}\frac{1}{8}\frac{1}{0}$.
32. Multiply $\frac{4}{8}\frac{2}{4}$ by $\frac{1}{1}\frac{0}{8}\frac{5}{7}\frac{5}{2}$.
33. Divide $3\frac{4}{7}$ by $\frac{2}{4}\frac{6}{5}$.
34. Add ·50145, ·00704, 4·00005, 8000·2, and ·000945.
35. Subtract ·44006 from 12·013.
36. Multiply ·17034 by 8572.
37. Divide 5·008 by ·049.
38. What decimal of a pound troy is $\frac{2}{3}$ dwt.?
39. Reduce 1 ac. 3 rds. 5 pls. to sq. ft.
40. How much land of the value of 2*l.* 13*s.* 4*d.* per acre must be given for 188 acres, valued at 2*l.* 10*s.* per acre?
41. Find (by Practice) the wages of a man for 2 wks. 4 dys. 10 hrs. at 36*s.* a week, reckoning 6 days to a week, and 12 hours to a day.
42. In what time will 540*l.* amount to 712*l.* 16*s.*, at 4 per cent.?
43. Add 9, $2\frac{1}{4}$, $\frac{1}{3}\frac{1}{7}\frac{1}{7}$, and $\frac{1}{5}\frac{1}{7}$.
44. Subtract $2\frac{1}{1}\frac{1}{8}$ from $10\frac{1}{3}\frac{1}{9}$.
45. Multiply $\frac{6}{1}\frac{8}{5}\frac{8}{6}$, $\frac{4}{1}\frac{8}{2}\frac{8}{5}$, and 9.
46. Divide $300\frac{3}{8}$ by 15.
47. Add 20134, ·1992, ·0050434, ·061, and 1.
48. Subtract ·004301 from ·0102.
49. Multiply 8892 by ·002453.
50. Divide 15483·2 by ·001125.
51. Reduce $3\frac{1}{4}$ guineas to the decimal of 2*l.* 15*s.*
52. Find the sq. root of 676·208016, and the cube root of 66·923396.

53. Find the true discount on 528*l.* 15*s.*, due 4 years hence, at 5½ per cent.

54. Find the average of $12\frac{1}{2}\frac{3}{5}$, 21, $7\frac{1}{4}$, ·034, $3\frac{1}{8}$, 0, $24\frac{1}{2}$, and $12\frac{7}{10}$.

55. If, by selling goods for 136*l.*, I lose 16 per cent., how much per cent. should I have lost or gained if I had sold them for 160 guineas?

56. Add together—$\frac{5}{8\,3}$ of a square mile, $\frac{7}{10}$ of an acre, and $\frac{5}{8}$ of a rood.

57. A person invests 6534*l.* in the 3 per Cents. at 90, and on their rising to 91 transfers his stock to the 3½ per Cents. at 93½; how is his annual income affected?

58. The consumption of malt is 7,200,000 quarters, and the duty is 16*s.* 6*d.* per quarter. If the duty be reduced 30 per cent., and the consumption increases 20 per cent., how will the revenue be affected?

59. The sidereal year being 365 dys. 6 hrs. 9 min. 9·6 sec.; and the tropical year 365 dys. 5 hrs. 48 min. 49·7 sec.; reduce their difference to the decimal of a sidereal year.

60. After a certain number of men had been employed on a piece of work 24 days, and had half finished it, 16 men more were set on, and the remaining half was completed in 16 days; how many men were employed at first, and what was the whole expense of the work at 1*s.* 6*d.* a day per man?

61. Multiply 13 ft. 7 in. by 9 ft. 3 in., and the product by 2 ft. 5 in.; and express the result in cubic feet and inches.

62. A room is 34 ft. 8 in. long, 13 ft. 6 in. wide, and 10 ft. 9 in. high. Find the cost of papering it with paper 1 ft. 10 in. wide, at 6*d.* per yard; and of carpeting it with carpet ⅘ yd. wide, at 3*s.* 4½*d.* per yard.

63. Reduce $\frac{5\cdot1183}{\cdot0141}$ of $22\cdot\dot{2}$ of $\cdot\dot{0}\dot{9}$ of $\cdot\dot{2}3\dot{4}$ to a vulgar fraction.

COLLEGE OF PRECEPTORS.

15. Christmas, 1866.—Third Class.

1. Express in figures—Five hundred and twenty million sixty thousand seven hundred and nine.

2. Multiply 47268 by 809; and divide 59123647 by 75800.

3. Find the cost of 275 cwt. at 3*l.* 7*s.* 10½*d.* per cwt.

4. Divide 41298*l.* 5*s.* 5½*d.* amongst 567 persons.

5. Reduce 292714 seconds to days &c.

6. Multiply 6 fur. 28 po. 4 yds. 2 ft. by 7.

7. Add together $2\frac{4}{5}$, $3\frac{7}{8}$, $4\frac{1}{1\,2}$.

8. Multiply $9\frac{3}{5} \times \frac{1\frac{1}{2}}{2\frac{2}{3}} \times \frac{6}{7\frac{1}{2}}$.

9. Find the value of $\frac{7}{8}$ guineas $- 3\frac{1}{4}$ of 7*s.* 6*d.*; and express 14 cwt. 1 qr. 4 lbs. as the fraction of a ton.

10. Find (by Practice) the cost of 952 lbs. of tea at 3*s.* $8\frac{1}{2}$*d.* per lb.

11. If a person, travelling 10 hours a day, performs a journey in 15 days, how many days of $12\frac{1}{2}$ hrs. will he require?

12. A piece of plate weighing 1 lb. 11 oz. 10 dwt. is worth 6*l.* 9*s.* 3*d.*; find the value of 8 oz.

SECOND CLASS.

13. Find the price of 275 cwt. at 3*l.* 7*s.* $10\frac{1}{2}$*d.* per cwt.

14. Multiply 6 fur. 28 po. 4 yds. 2 ft. by 49.

15. Simplify $7\frac{3}{5} - 3\frac{1}{5} - 5\frac{1}{4} + 9\frac{2}{15}$.

16. Divide 3*l.* 2*s.* 11*d.* by $\frac{11}{121}$; and reduce $3\frac{1}{11}$ of 2 qrs. 7 lbs. to the fraction of 3 cwt. 16 lbs.

17. Add $2\frac{5}{16}$, 3·47, ·0013, and $\frac{\cdot 000625}{\cdot 025}$.

18. Find the value of 1·58625 days; and reduce 3*s.* $3\frac{3}{4}$*d.* to the decimal of 4*s.* 5*d.*

19. If 1 bush. 2 pks. of wheat cost 7*s.* $3\frac{3}{8}$*d.*, what must be given for 5 qrs. 3 bush.?

20. If 9 men earn 41*l.* 8*s.* in 24 days, how many will earn 460*l.* in 16 days?

21. Find the simple interest on 183*l.* 6*s.* 8*d.* for 1 year 146 days at $4\frac{1}{2}$ per cent.

THIRD CLASS.

22. How many miles &c. in 4763870 inches?

23. A person possessing $\frac{3}{14}$ of an estate sold $\frac{2}{7}$ of $\frac{1}{3\frac{1}{5}}$ of his share for $120\frac{5}{8}$*l.*; what would $\frac{1}{5}$ of $\frac{3}{16}$ of the estate cost?

24. If 15 men do a piece of work in $12\frac{3}{8}$ days of $9\frac{1}{2}$ hours each, in how many days of 11 hours each will 9 men do $4\frac{1}{2}$ times as much?

25. Divide 333*l.* 6*s.* 8*d.* among A, B, and C, so that B has $1\frac{2}{3}$ of A's share, and C as much as A and B together.

26. A silver cup was sold for 12 guineas at a loss of $5\frac{1}{2}$ per cent.; at what price ought it to be sold to gain 26 per cent.?

27. Find the amount of 500*l.* in 3 years at 4 per cent. comp. interest?

28. Reduce $\frac{1}{4}\frac{1}{1}\frac{1}{0}$ to decimals; multiply $\frac{4}{5}$ of ·40193071 by $\frac{1}{4}$ of 1265·6.

29. Divide 24·85 by ·0025, and 27·5 by ·064.

30. Divide 136*l.* 17*s.* 3·1025*d.* by 48·11; and find the value of 3·3275 of 3 qrs. 6 lbs.

31. If ·25 of 1·$\dot{3}$ of an ounce of gold is worth 1·3$\dot{3}$66*l.*, find the value of 6·7$\dot{3}$ oz.

32. A train going $18\frac{1}{2}$ miles per hour, started at 6 o'clock on a journey of 148 miles. A second train, starting from the same station, whose speed was as to the former as 8 : 5, arrived 15 minutes before it. At what time did the second start?

16. Midsummer, 1867.—Third Class.

1. Add together—Six hundred thousand three hundred and one, Eight millions and twenty, Two thousand seven hundred millions fourteen thousand and seventy-nine.

2. Multiply 36495 by 7080; and divide 3274100 by 965.

3. Multiply 2*l.* 17*s.* $4\frac{3}{4}$*d.* by 478.

4. Divide 295 tons 6 cwt. 3 qrs. 24 lbs. by 76.

5. How many half-guineas are there in 1323 half-crowns; and in 8640 yards how many poles?

6. If a sovereign weighs 123 grains, how many sovereigns can be made from a wedge of gold weighing 3 lbs. 10 oz. 2 dwt. 12 grs.?

7. If 84 lbs. of arrowroot at 2*s.* 3*d.* per lb. are given in exchange for 72 lbs. of tea, what is the value of the tea per lb.?

8. A room is 13 ft. 6 in. long, and 13 ft. wide; how many yards of carpet, 2 ft. 3 in. wide, will cover it?

9. Find the G. C. M. of 5565 and 8533, and the L. C. M. of 5, 7, 12, 15, 27.

10. Add together—$12\frac{1}{8}$, $6\frac{1}{8}$, $4\frac{7}{18}$, 5. From $17\frac{4}{18}$ take $13\frac{6}{36}$.

11. Multiply $\frac{1\frac{1}{4}\text{ of }7\frac{1}{3}}{3\frac{1}{7}}$ by $\frac{1\frac{1}{3}}{3\frac{8}{9}}$.

12. Divide 1*l.* 16*s.* $10\frac{3}{4}$*d.* by $2\frac{1}{4}$.

Second Class.

13. If a gentleman spends 2*l.* 7*s.* $1\frac{1}{2}$*d.* a day, and lays by 139*l.* 19*s.* $4\frac{1}{2}$*d.* at the end of the year, what is his income?

14. Divide 295 tons 6 cwt. 3 qrs. 24 lbs. by 76.

15. Reduce $\frac{3\frac{5}{6}\times 1\frac{7}{10}+10\frac{1}{5}}{7\frac{5}{12}-6\frac{7}{9}}$ to its simplest form.

16. Resolve 360 and 765 into their prime factors, and find their L. C. M.

17. If $3\frac{1}{4}$ shares are worth 27*l.* 10*s.*, what are $4\frac{3}{8}$ shares worth?

18. Find the price of 5 cwt. 2 qrs. 16 lbs. at 6*l.* 15*s.* 4*d.* per cwt.

19. A field containing 2 a. 1 r. 18 p. was divided between 2 persons; one received 1 a. 2 r. 12 p. What fractional part of the field was each person's share?

20. Reduce 4*l.* 13*s.* $4\frac{1}{2}$*d.* to the decimal of 100*l.*

21. How many metres are there in 3 p. 4 yds., a metre being equal to 39·371 inches.

22. What principal will produce 591*l.* 12*s.* 4*d.* in 4 years, at $2\frac{1}{2}$ per cent. simple interest?

23. A room is 13 ft. 6 in. long, and the floor contains 19 sq. yds. 4 ft. 72 in. Find its breadth, and expense of covering it with carpet $\frac{3}{4}$ of a yard wide, at 3*s.* 6*d.* per yard.

First Class.

24. Express in figures the following number:—Two hundred and seventy thousand millions forty-six thousand and three.

25. Calculate the value of 385 a. 2 r. 35 p. at 49*l.* 18*s.* 8*d.* per acre; and reduce 91959 sq. yds. to poles.

26. Simplify $64\frac{8}{25}+78\frac{84}{303}-120\frac{9}{7}$; and resolve 360 and 765 into prime factors.

27. What fraction of 16 cwt. 14 lb. 4 oz. is $7\frac{3}{37}$ of 1 qr. 18 lbs. 4 oz.?

28. Divide 82·5 by ·256; 567·24 by ·0012; and $3\dot{6}$ by $1{\cdot}52\dot{7}$.

29. Reduce 4*l*. 13*s*. $4\frac{1}{2}$*d*. to the decimal of 500*l*.

30. Find the present value and discount of 149*l*. 0*s*. 5*d*. due 11 months hence, at 4 per cent. per annum.

31. The sum of 2000 guineas was invested in 3 per cent. Consols at $87\frac{1}{2}$; find the income derived from it. What was gained by selling the stock at $90\frac{1}{4}$?

32. If a person receives $4\frac{4}{7}$ per cent. per annum for money invested in the Indian 5 per cents., at what price did he buy in?

33. If a train, which runs at the rate of 45 miles an hour, leaves London 1 hour 20 minutes after another train at 30 miles an hour, and overtakes it at Bristol; find the distance, and the time occupied by each train.

34. A cistern contains $243\frac{3}{4}$ cubic feet of water; its length is 11 ft. 3 in., and its depth 3 ft. 4 in. How wide is it; and what will be the dimensions of another cistern, 4 ft. 4 in. deep, with a square base, and containing four times as much water?

35. Extract the cube root of 14348907.

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17. CHRISTMAS, 1867.—THIRD CLASS.

1. Divide 23991640 by 692; what number divided by 94097 will give a quotient 8050, and a remainder 278.

2. Find the weight of 6 dozen silver spoons, each weighing 2 oz. 17 dwts. 22 grs.

3. Divide 147 tons 13 cwt. 1 qr. 26 lbs. by 38.

4. A person changed a ten pound note, and received an equal number of half crowns, florins, shillings, sixpences, and threepences; how many were there of each?

5. Supposing an infant's pulse to beat 110 times a minute; how old is the child after five millions and fifty pulsations?

6. If the railway fare of 36 persons for 52 miles comes to 10*l*. 14*s*.; how far ought 78 persons to be carried for the same money?

7. How much wine can be bought for 10*l*. 3*s*. 6*d*., if 18*s*. 6*d*. be given for 5 qts. 1 pt.?

8. Find (by Practice) the cost of 324 bush. of wheat at 7*s*. $9\frac{1}{2}$*d*. per bushel.

9. Add together—9, $8\frac{3}{4}$, $7\frac{5}{12}$, $6\frac{7}{18}$.

10. Find the value of $\frac{2\frac{1}{2}}{6\frac{2}{3}}$ of $\frac{1\frac{7}{9}}{3\frac{5}{9}}$ of $\frac{7\frac{1}{3}}{1\frac{2}{3}}$.

11. Multiply 1*l*. 14*s*. $2\frac{4}{6}$*d*. by $3\frac{1}{3}$.

12. Reduce 1 qr. 4 lbs. 13 oz. to the fraction of 1 qr. 11 lbs. 6 oz.

SECOND CLASS.

13. Multiply 8 oz. 5 d. 2 sc. 18 grs. by 17, and reduce the result to grs.

14. Add 18*l*. 16*s*. $9\frac{3}{4}$*d*. + 19*l*. 9*s*. $11\frac{1}{2}$*d*. + 15*l*. 18*s*. $7\frac{3}{11}$*d*. + 17*l*. 17*s*. $6\frac{5}{12}$*d*.

15. Find the value of 1 lb. 3 oz. $1\frac{1}{3}$ dwt. of gold at 16*s*. 6*d*. for $5\frac{1}{2}$ dwts.

16. What fraction of 1 cwt. 6 lbs. 2 oz. is 3 qrs. 14 lbs. 7 oz.; and how often is $3\frac{1}{2}$ of 1*l.* 14*s.* $5\frac{3}{4}$*d.* contained in 11*l.* 9*s.* $9\frac{1}{2}$*d.*?

17. Find the price of 7 cwt. 3 qrs. 11 lbs. at 3*l.* 7*s.* 8*d.* per cwt.

18. A grocer sold 84 lbs. of tea for 14*l.* 14*s.* at a profit of 20 per cent.; what did he pay for the tea per pound?

19. At what rate per cent. will the interest on 91*l.* 13*s.* 4*d.* amount to 17*l.* 10*s.* $7\frac{1}{2}$*d.* in $4\frac{1}{2}$ years?

20. Divide 28 by ·0025, ·028 by 25, and 810 by 34·35.

21. Reduce 1*l.* 5*s.* $7\frac{1}{2}$*d.* to the decimal of 10*s.*, and of 10*l.*

First Class.

22. Calculate (by Practice) the value of 4 cwt. 2 qrs. 10 lbs. at 2*l.* 18*s.* 4*d.* per quarter.

23. What fraction of $1\frac{3}{7}$ of 1*l.* 2*s.* 9*d.* is $\frac{1}{4}\frac{3}{2}$ of 5*s.*?

24. A person having lost $\frac{2}{5}$ of his money, found that $\frac{1}{4}$ of $3\frac{4}{7}$ of what he then had was $2\frac{1}{4}$ of 51*l.* 8*s.* $6\frac{2}{3}$*d.*; what had he at first?

25. If 9 women can do a piece of work in $11\frac{1}{7}$ days of $8\frac{1}{4}$ hours each; how many days of $9\frac{1}{4}$ hours would it take 5 men, who can do $\frac{1}{7}$ as much again as the women, to do $2\frac{2}{5}$ of the work?

26. Reduce $2\frac{1}{2}$*s.* to a decimal of 10*s.* 6*d.*; divide ·014616 by 7·2, and 400·4 by ·0572.

27. Find the value of 1·75 of $3\frac{1}{2} - 3\frac{2}{3} + \frac{\cdot 5}{7\frac{1}{2}}$, and of $\cdot\dot{1}42857\dot{1}$ of 1 fur. 18 pls. 3 yds.

28. If, by selling 8 oranges for $6\frac{2}{3}$*d.*, there be a profit of 10 per cent.; at what price per dozen must they be sold to gain 21 per cent.

29. If the discount of 249*l.* be 9*l.*, at 5 p. c.; when is the sum due?

30. What sum should be insured at 2*l.* 2*s.* 6*d.* per cent. on goods worth 783*l.*, that the owner may recover, in case of loss, the value of both goods and premium?

31. What is the price of the 4 per cent. stock when a person gets the same interest for his money as if he invested it in the $4\frac{1}{2}$ per cents. at 90?

32. Extract the square root of $1\cdot 7866\dot{7}$.

FINIS.

71